StarQuality Application

User Manual

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Installation	Added licence loading steps.	February 2009
Settings	Moved topics into relevant chapters.	February 2009

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About this Manual

The StarQuality User Manual comprises the following chapters:

Chapter 1- Introduction - provides an overview of the StarQuality system and its functionality.

Chapter 2 - Installation - describes how to install and uninstall the StarQuality application and use commands to start and stop it.

Chapter 3 - Getting Started - describes the structure of the interface windows, logging in, general display options, searching, the menu system, operations and navigation, and editing of objects,

Chapter 4 - Network Discovery - describes the creation of a WiMAX network and all the BTSs under it. In addition, it describes the creation of a utility network.

Chapter 5- Viewing Measurements - describes browsing options, display options, viewing measurement data, searching measurements and saving items as a submenu.

Chapter 6 - Setting Alarm Thresholds - describes how to create threshold templates and assigning them to equipments.

Chapter 7 - Threshold Crossing Alarms - describes the alarms and how to navigate, view and filter them. It also explains how to download data to Excel files.

Chapter 8 - Reports - Setting and viewing reports.

Chapter 9 - General Setting Options - describes how to set the site and equipment configuration, thresholds, customizing, server configuration and management, audit trail and user administration.

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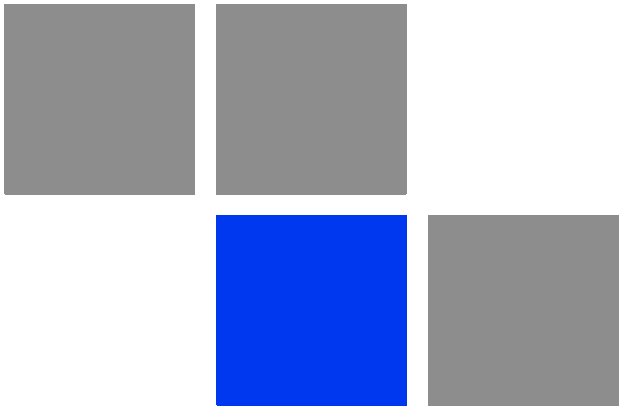
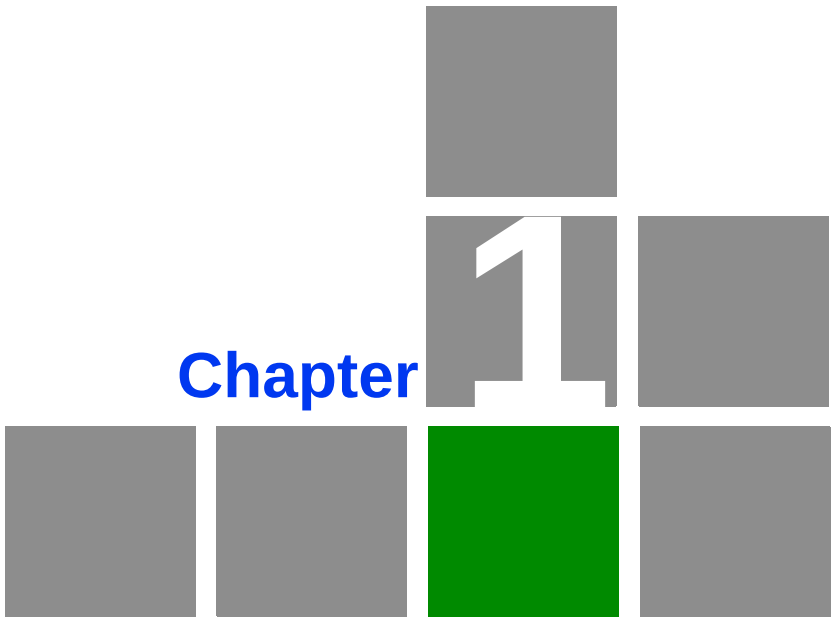




Chapter 1

Introduction

In this chapter:

- "System Overview" on page 3
- "System Data Structure" on page 4
- "User Types and Their Settings" on page 5

1.1 System Overview

1.1.1 General

Alvarion's StarQuality is a carrier-class performance and traffic monitoring system designed for optimizing the WiMAX Network performance, identifying network problems, maximizing traffic capacity and optimizing resource allocation. StarQuality offers an end-to-end performance solution including collection, analyzing, storing and displaying of the performance data. The system provides a unified performance application for monitoring Alvarion's WiMAX FDD and TDD equipment as well as server health.

StarQuality provides various sets of report types and lists through an intuitive and simple Web-GUI client. It also enables defining TCA (Threshold Crossing Alerts) mechanism: an alarm generation may be conditional to the occurrence of several rule violations.

Alvarion's StarQuality is an essential element for optimizing the WiMAX Network functionality, radio planning, ensuring service performance and problem identification.

1.1.2 Supported equipment

1.1.2.1 WiMAX

- FDD ver3.5/3.6 (FDD SNMP) - Micro and Macro BTS
- FDD ver3.7 (FDD TFTP) - Micro and Macro BTS
- TDD ver4.5 and later (TDD TFTP) - Macro BTS only

1.1.2.2 Server Health

- AlvariSTAR ver4.0 and up
- Oracle database server
- UNIX OS

1.2 System Data Structure

The basic entities comprising the StarQuality network are:

- Equipment - also referred to as the device:
  - » BTS and SU for WIMAX networks
  - » AlvariSTAR, Oracle database server and UNIX machine for Server Health.

  Each piece of equipment belongs to a site.
- Basic sampled unit:
  - » SU, AU (n times in each BTS) for WIMAX networks
  - » AlvariSTAR, Oracle database server and UNIX machine for Server Health.
- Site – collection of equipments and/or sites. Each site can contain arbitrary many sites and equipment. Each site can reside below another site.
- Root – a virtual site – collection of sites only

A bare System contains only ROOT.

1.3 User Types and Their Settings

In the StarQuality, different users can have different access rights to various objects. There is always an administrator user (admin) with the highest permission level. The individual user groups are:

- **admin user:** The user named *admin* possesses all the rights, but cannot configure preferences, and cannot create a private virtual hierarchy and charts. The default password is admin123 at installation. This user cannot be deleted from the system.

- **Administrator:** has the same rights as the *admin* user, except:

  - Cannot create, modify and delete administrator users
  - Cannot create, modify and delete servers or server groups, cannot view the operating system level user password on some computers
  - Cannot change and view the actual licences used
  - Can set preferences, and create a private virtual hierarchy and charts

- **Restricted administrators:** similar to the normal users they can only view those objects that they have received privileges for. However the restricted administrators can modify these objects:

  - Only those site, equipment, measurement, threshold, threshold type and exclusion window objects for which they have received privileges
  - Can only modify a user if it was created by themselves
  - Can only view an entry in the audit log if the change was made by themselves
  - Can only modify a public virtual hierarchy object or a public chart if it was created by themselves
  - Cannot modify templates (except the exclusion windows), reports, servers, events and maps

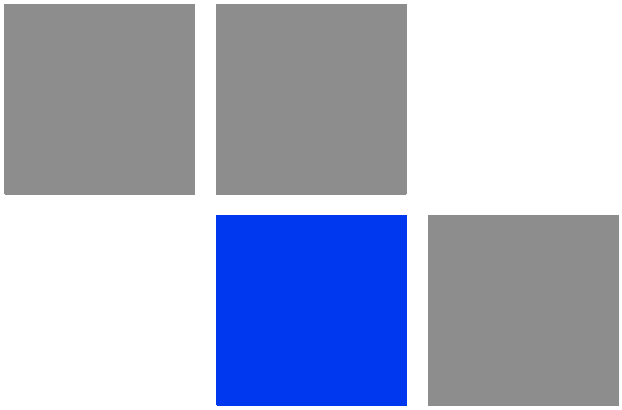
- **Normal users:** cannot modify the base objects in the system, and can view only those objects that they have received privileges for. They can set

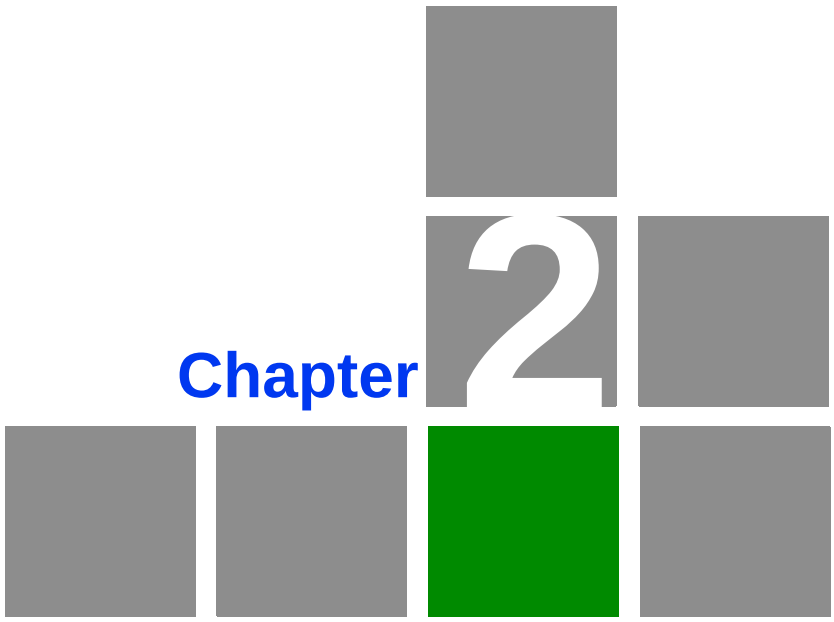
preferences, create private virtual hierarchies and charts, and can modify their own passwords

- **Limited users:** Similar to normal users, but they cannot change their passwords, cannot set preferences, and cannot create private virtual hierarchies and charts

Any administrator has the right to modify normal users, while only the admin user can modify administrators. Restricted administrators cannot modify a user except if it was created by themselves. No user can delete the admin user.

For further information, refer to the “User Administration (Admin only)” on page 178.





Chapter 2
Installation

In this chapter:

- “Prerequisites” on page 11
- “Installed Components” on page 10
- “Prerequisites” on page 11
- “Installing StarQuality” on page 20
- “Uninstalling the StarQuality” on page 30
- “Starting and Stopping the System Using Commands” on page 31

2.1 Introduction

The installation has to be performed by an administrator user.

If a previous StarQuality version is detected during installation, the installer takes the default values from that version and automatically switches to upgrade mode. The StarQuality service has to be stopped prior to the installation in case of upgrade.

IMPORTANT

If you are running an upgrade then this does not necessarily mean that the installer would keep the StarQuality files or existing collected data. Therefore, prior to upgrade, make sure to check the release notes for version specific information.

During the installation the installer writes information into two destinations: the details view and the log file. To display the details view click the **Show Details** button. The log file is located in the TEMP directory of the user, by default the *C:\Documents and Settings\<USER>\Local Settings\Temp* directory.

2.2 Installed Components

The installer application installs the following components, if they do not already exist.

- Java jre
- Apache

2.3 Prerequisites

StarQuality can be installed on a Windows 2003 server using the GUI-based installer.

Prior to installation, the following is required:

2.3.1 Oracle

- Oracle version10.2 and later (can be installed on the same machine with the StarQuality or on a separate server).
- Oracle client on the StarQuality machine – same version as server (in case the StarQuality and Oracle are on separate machines)
- Oracle Installation options:
  - » Basic installation
  - » Create starter database
- Database server should be running during the StarQuality installation
- Available information: IP, service name, TNS, password for SYSTEM user

The installer also checks these prerequisites.

2.3.2 Cygwin

Cygwin is a UNIX-like environment for Windows. Operation commands must always be executed from a cygwin window.

The Cygwin Installation files can be downloaded from the internet or Alvarion FTP Server. The procedure detailed here for installation refers to downloading the version available on the Alvarion FTP server.

To download and install Cygwin from the Alvarion FTP server:

1 Download the *CygwinFromWwwGoh4Com.zip* file from ftp://194.116.226.38/STAR-Quality/(Username and password required).

2 Place the zip file in a folder with a path that does not include spaces, and extract the files.

3 From the extracted files run the *setup.exe* file; The Cygwin Net Release Setup Program window is displayed.

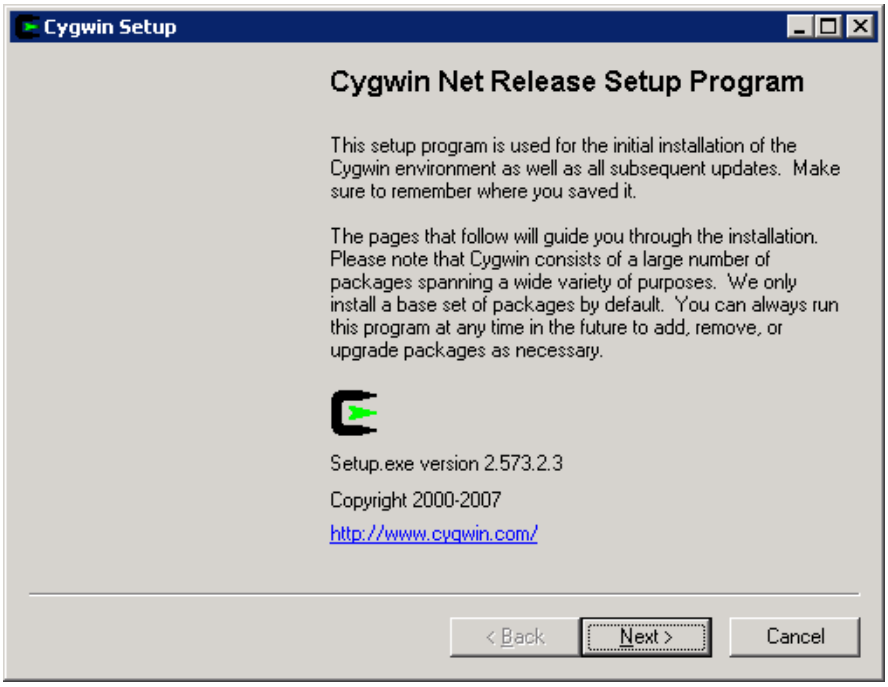

Cygwin Setup
Cygwin Net Release Setup Program
This setup program is used for the initial installation of the Cygwin environment as well as all subsequent updates. Make sure to remember where you saved it.
The pages that follow will guide you through the installation. Please note that Cygwin consists of a large number of packages spanning a wide variety of purposes. We only install a base set of packages by default. You can always run this program at any time in the future to add, remove, or upgrade packages as necessary.
Setup.exe version 2.573.2.3
Copyright 2000-2007
http://www.cygwin.com/
< Back
Next >
Cancel

Figure 2-1: Cygwin Net Release Setup Program window

4 Click **Next**. The Choose a Download Source window is displayed.

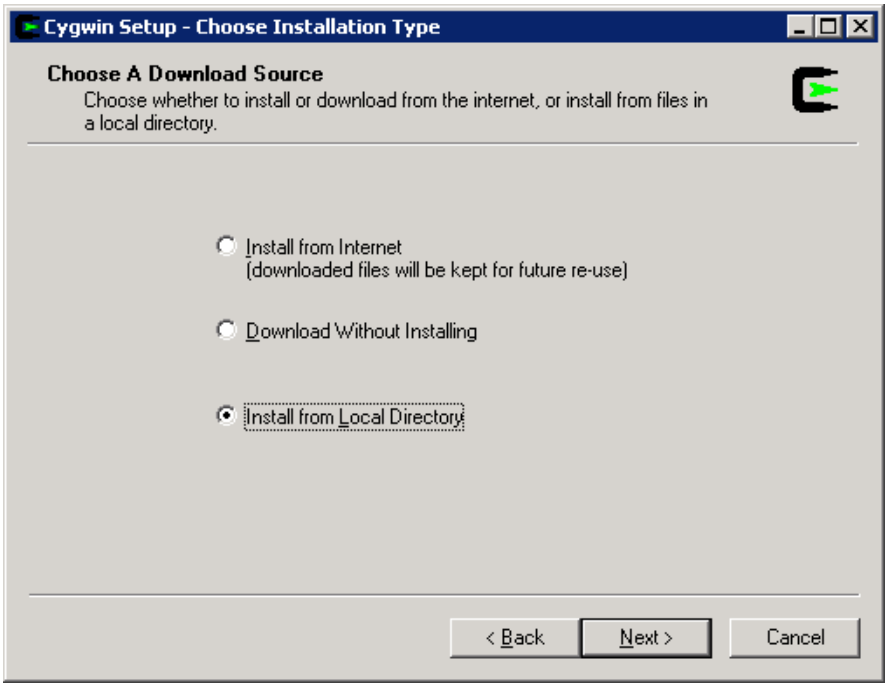

Cygwin Setup - Choose Installation Type
Choose A Download Source
Choose whether to install or download from the internet, or install from files in a local directory.
Install from Internet
(downloaded files will be kept for future re-use)
Download Without Installing
Install from Local Directory
< Back
Next >
Cancel

Figure 2-2: Choose a Download Source Window

5 Select Install from Local directory. Click **Next**.

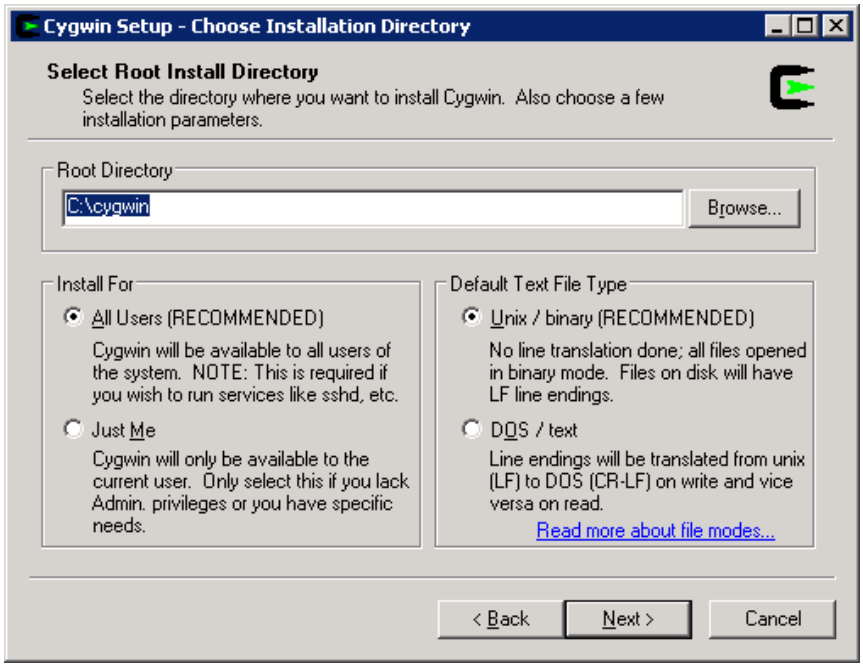

Cygwin Setup - Choose Installation Directory
Select Root Install Directory
Select the directory where you want to install Cygwin. Also choose a few installation parameters.
Root Directory
C:\cygwin
Browse...
Install For
All Users (RECOMMENDED)
Cygwin will be available to all users of the system. NOTE: This is required if you wish to run services like sshd, etc.
Just Me
Cygwin will only be available to the current user. Only select this if you lack Admin. privileges or you have specific needs.
Default Text File Type
Unix / binary (RECOMMENDED)
No line translation done; all files opened in binary mode. Files on disk will have LF line endings.
DOS / text
Line endings will be translated from unix (LF) to DOS (CR-LF) on write and vice versa on read.
Read more about file modes...
< Back
Next >
Cancel

Figure 2-3: Select Root Install Directory

6 Choose settings as recommended on screen. Verify that Root directory is a local drive. Click **Next**.

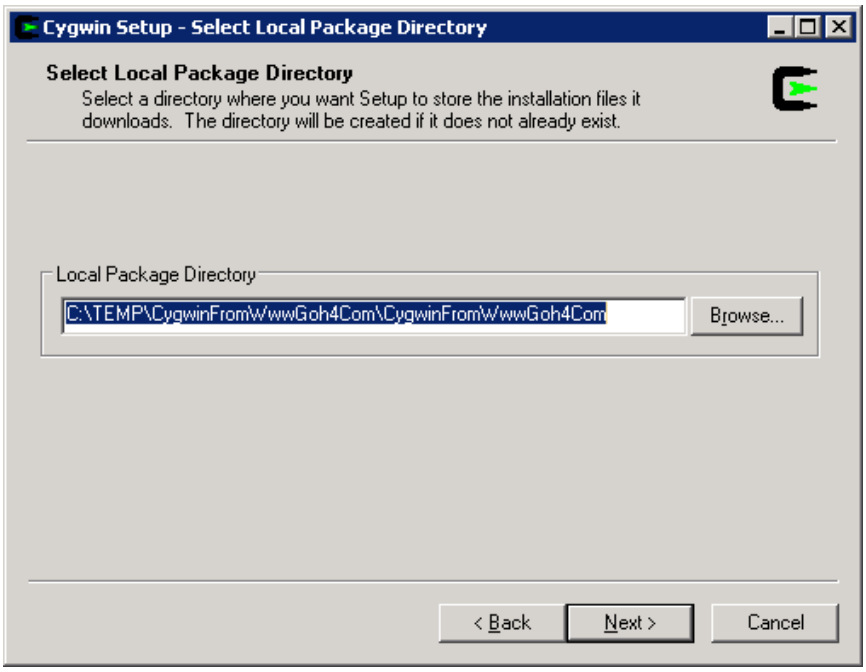

Cygwin Setup - Select Local Package Directory
Select Local Package Directory
Select a directory where you want Setup to store the installation files it downloads. The directory will be created if it does not already exist.
Local Package Directory
C:\TEMP\CygwinFromWwwGoh4Com\CygwinFromWwwGoh4Com
Browse...
< Back
Next >
Cancel

Figure 2-4: Select Local Package Directory

7 Verify that Local Package Directory is the correct path. Click **Next**; The Select Packages window is displayed.

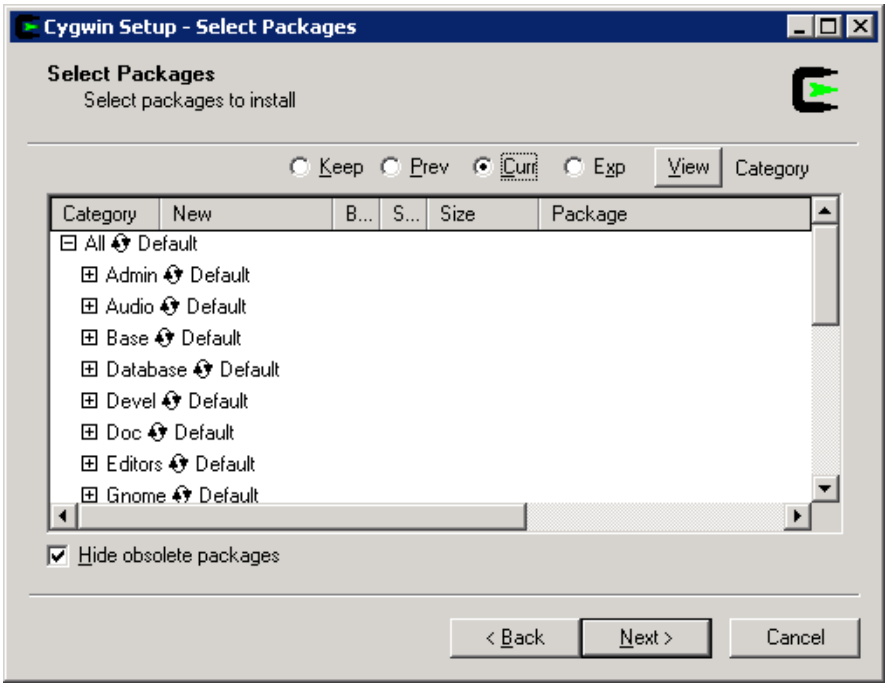


Figure 2-5: Select Packages Window - All Default

8 Click on the upper “Default” entry to change it to “Install”.

9 Verify that all entries have been changed to “Install”.

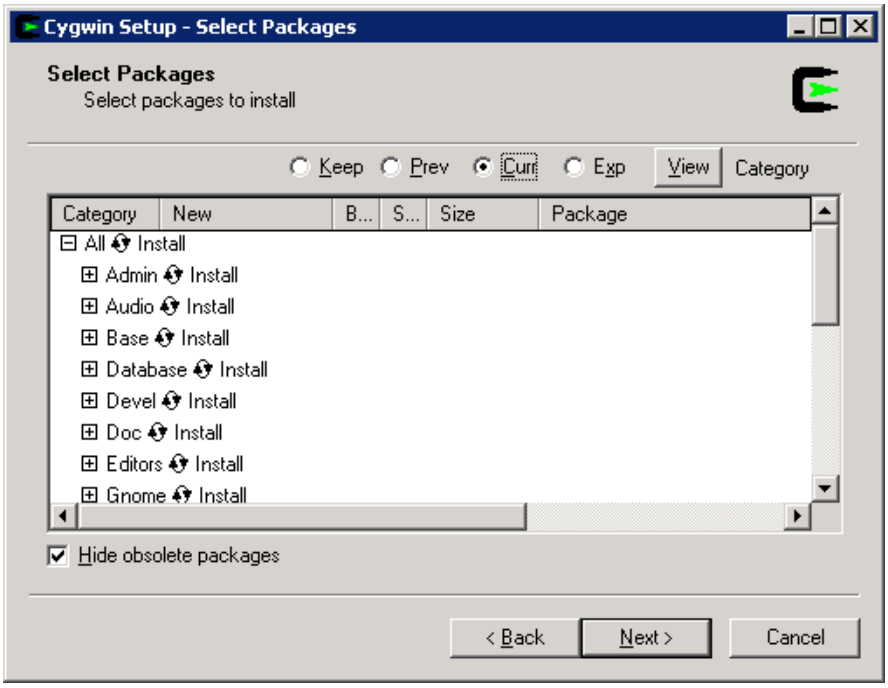


Figure 2-6: Select Packages Window - All "Install"

10 Scroll down to the Perl entry and expand it using the + sign.

11 Click the **Perl** entry to change its setting to "install" , and verify that the Perl version is 5.8.x.x.

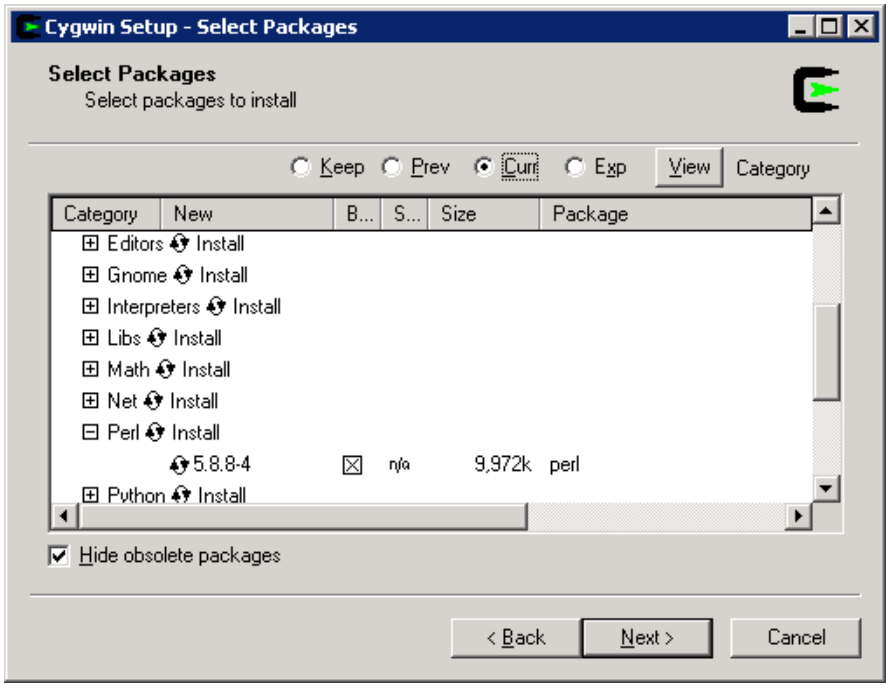


Figure 2-7: Select Packages Window - Perl Version

12 Click **Next**; the installation proceeds until completed.

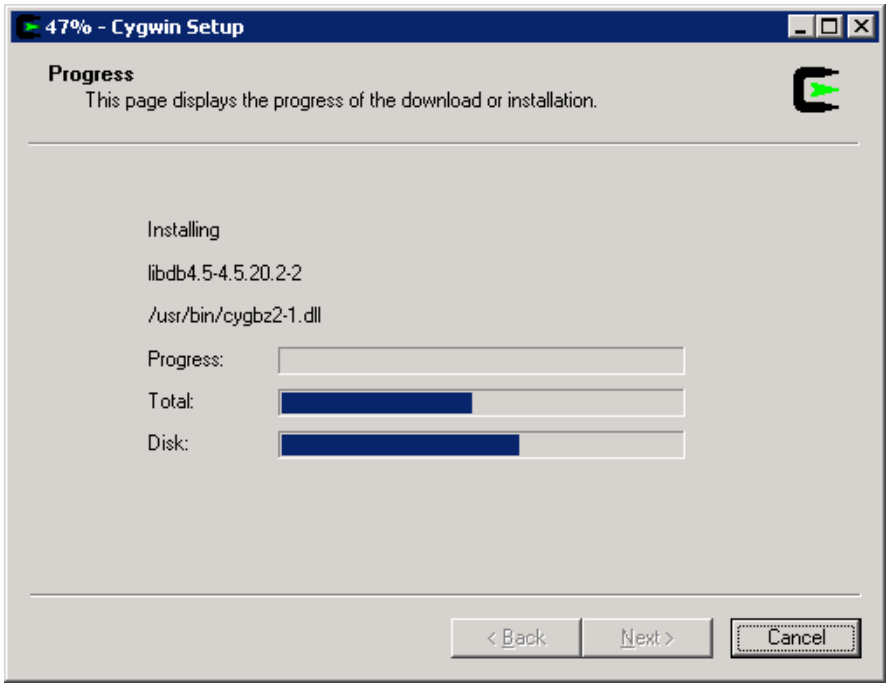


Figure 2-8: Cygwin Installation Process

13 Click **Finish**.

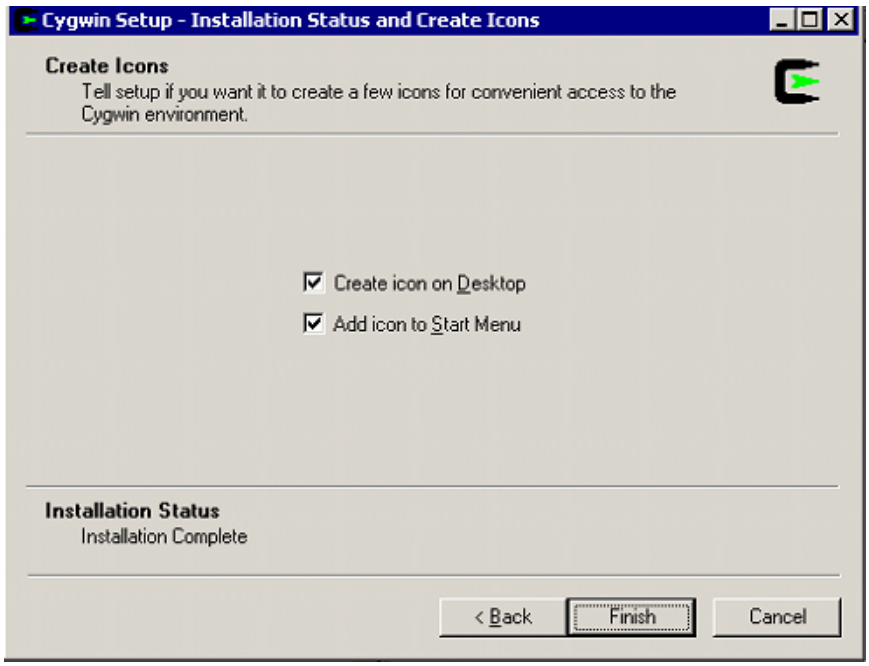

Cygwin Setup - Installation Status and Create Icons
Create Icons
Tell setup if you want it to create a few icons for convenient access to the Cygwin environment.
Create icon on Desktop
Add icon to Start Menu
Installation Status
Installation Complete
< Back
Finish
Cancel

Figure 3: Cygwin Installation Completion

To download and install Cygwin from the Internet:

Make sure the Cygwin version you download and use includes the following packages:

Sapache	base-files	base-passwd
bash	binutils	bzip2
coreutils	crypt	cygrunsrv
cygutils	cygwin	editrights
expat	findutils	gawk
gcc-core	gcc-g++	gcc-mingw-core
gcc-mingw-g++	grep	gzip
less	libbz2_1	libdb4.5
libexpat1	libexpat1-devel	libgdbm4
libiconv2	libintl3	libintl8
libncurses8	libpcre0	libpopt0

libreadline6	libwrap0	login
make	mingw-runtime	minires
openssh	openssl	perl - version 5.8.x.x
ping	sed	tar
termcap	terminfo	texinfo
tzcode	vim	w32api
which	zlib	

2.3.3 Other Prerequisites

- Minimum 5 Giga free disk space
- Network connection to BTS Network
- SNMP authorized manager on measured BTSs (traps disabled)
- SNMP read community known
- For TFTP collection, the PM/TM collection option should be enabled in all BTSs via AlvariSTAR or Telnet. In TDD systems, both basic or advance modes are applicable. Refer to the AlvariSTAR Device Driver User Manual.
- Valid licence

2.3.4 Hardware Prerequisites

Refer to the version specific release notes

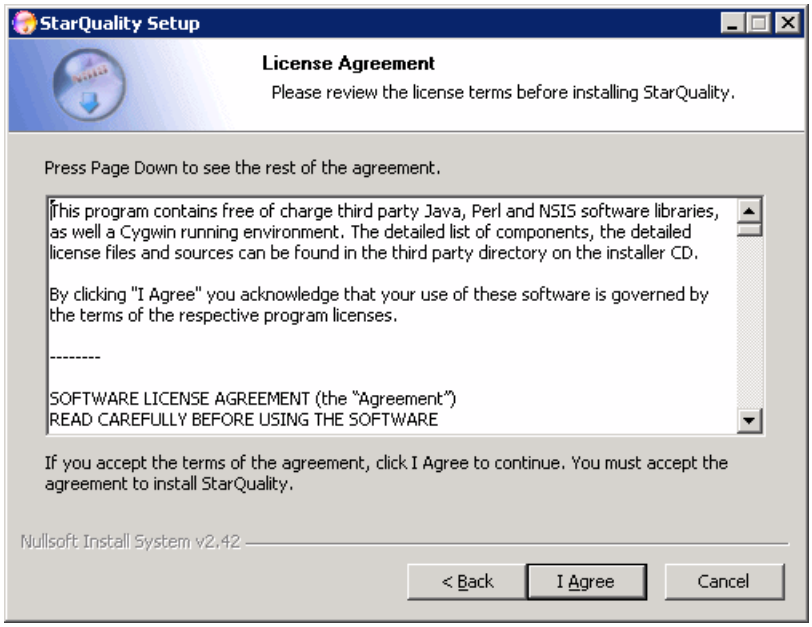
2.4 Installing StarQuality

1 Run the installation program *starquality.exe*; The installation wizard is displayed.

StarQuality Setup
Welcome to the StarQuality Setup Wizard
This wizard will guide you through the installation of StarQuality.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

Figure 2-1: StarQuality Setup Wizard Window

2 Click **Next**; the wizard displays a license agreement. Please read the agreement carefully.


StarQuality Setup
License Agreement
Please review the license terms before installing StarQuality.
Press Page Down to see the rest of the agreement.
This program contains free of charge third party Java, Perl and NSIS software libraries, as well a Cygwin running environment. The detailed list of components, the detailed license files and sources can be found in the third party directory on the installer CD.
By clicking "I Agree" you acknowledge that your use of these software is governed by the terms of the respective program licenses.

SOFTWARE LICENSE AGREEMENT (the "Agreement")
READ CAREFULLY BEFORE USING THE SOFTWARE
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install StarQuality.
Nullsoft Install System v2,42
< Back
I Agree
Cancel

Figure 3: Licence Agreement

3 Click **Next**; the wizard displays components to install.

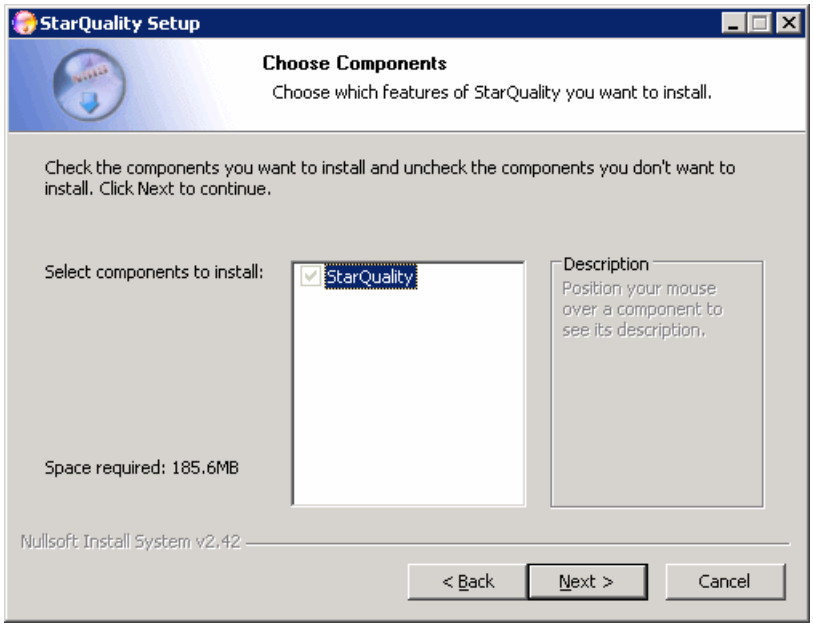

StarQuality Setup
Choose Components
Choose which features of StarQuality you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.
Select components to install:
StarQuality
Description
Position your mouse over a component to see its description.
Space required: 185.6MB
Nullsoft Install System v2,42
< Back
Next >
Cancel

Figure 2-1: Choose Components

4 Click **Next**; The Choose Install Location is displayed. The application will be installed in the Destination folder .

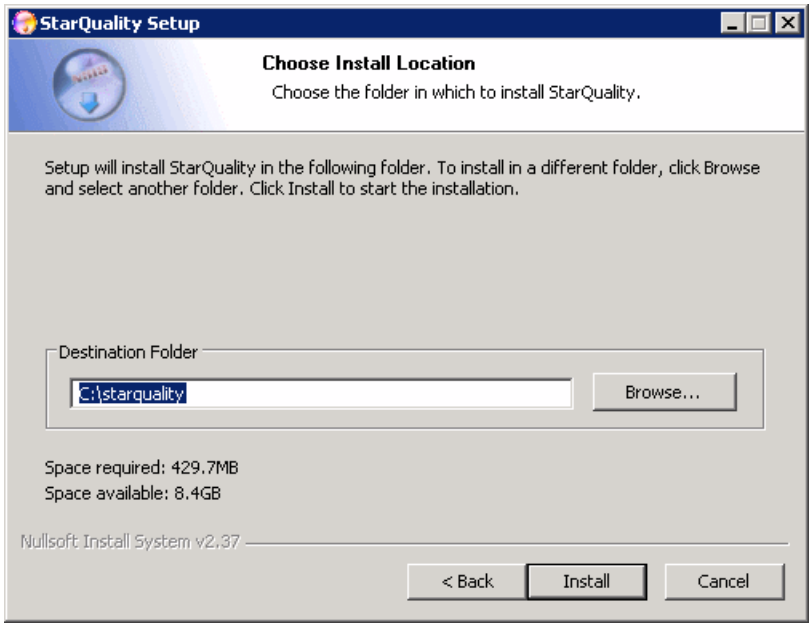

StarQuality Setup
Choose Install Location
Choose the folder in which to install StarQuality.
Setup will install StarQuality in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\starquality
Browse...
Space required: 429.7MB
Space available: 8.4GB
Nullsoft Install System v2.37
< Back
Install
Cancel

Figure 2-2: Choose Install Location

5 Click **Install**.

6 StarQuality installation starts. To view detailed information click **Show Details**. The content of the details view can be copied to the clipboard.

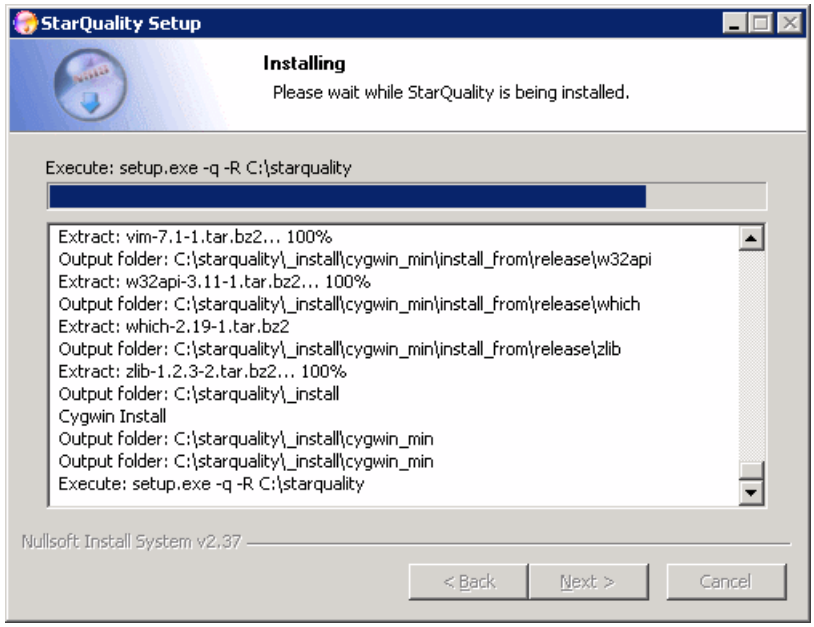


Figure 2-3: StarQuality Installing

The last page indicates that the basic installation is done.

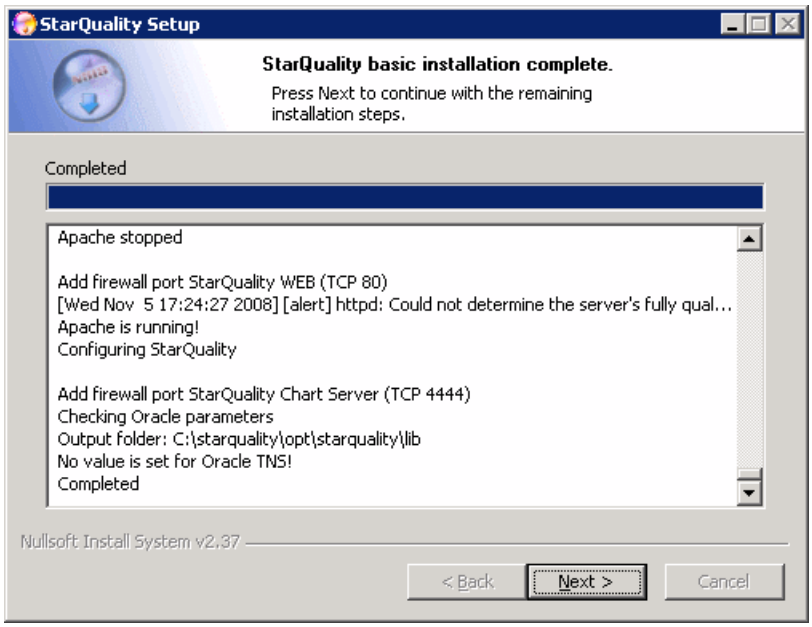

StarQuality Setup
StarQuality basic installation complete.
Press Next to continue with the remaining installation steps.
Completed
Apache stopped
Add firewall port StarQuality WEB (TCP 80)
[Wed Nov 5 17:24:27 2008] [alert] httpd: Could not determine the server's fully qual...
Apache is running!
Configuring StarQuality
Add firewall port StarQuality Chart Server (TCP 4444)
Checking Oracle parameters
Output folder: C:\starquality\opt\starquality\lib
No value is set for Oracle TNS!
Completed
Nullsoft Install System v2.37
< Back
Next >
Cancel

Figure 2-4: Installation Complete

7 Click **Next**; the installer checks the additional tasks and shows only the relevant pages. If this is only a software upgrade of an already successfully installed StarQuality, only one additional page is displayed, and if a database schema upgrade is required, the installer prompts for it.

8 If the StarQuality Windows service has not been registered yet, the StarQuality Windows Service Registration window is displayed. The service will be run with the given Windows user: the installer automatically fills in the current user name, but if this user is not a local user but a domain user, then the dot (.) should be replaced with the domain name, for example: DOMAIN\Alvarion.

IMPORTANT

If the user name is changed, the StarQuality service will not function

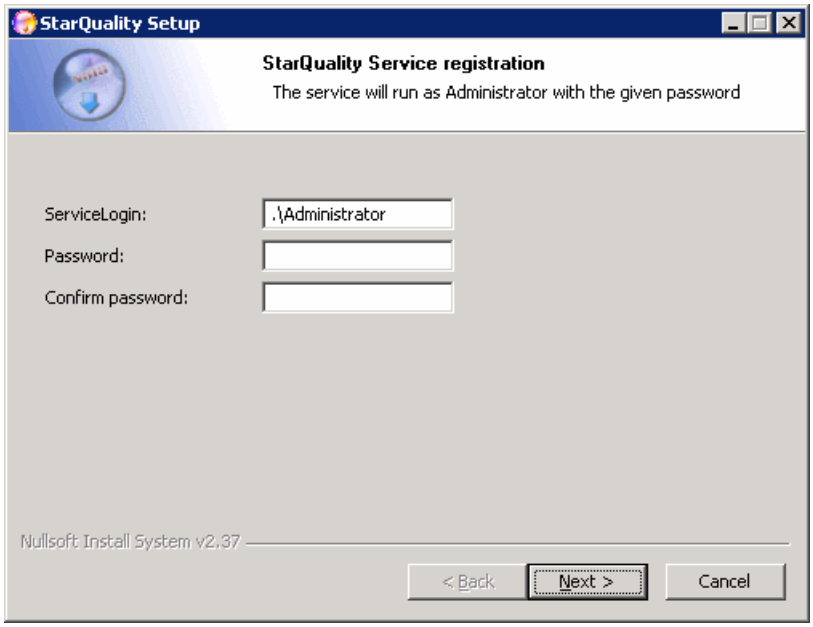


Figure 2-5: StarQuality Windows Service Registration

9 Click **Next**; The Oracle Connection page is displayed.

If the page is shown for a previously installed StarQuality, the installer takes the default values from that installation. If it is a new installation, then it tries to detect the value for the Oracle home and sets the port to the common value (1521). All other values have to be filled in:

- **TNS:** the TNS name to be used for the database connection.

IMPORTANT

The installer does not configure the *tnsnames.ora* file; The users have to do it manually.

- **Host and port:** the host and port used for the database connection. Port default is 1521. Host can be either:
  - » Local host (in case that StarQuality and Oracle are on the same machine)
  - » Hostname
  - » IP
  - » 127.0.0.1 (in case that StarQuality and Oracle are on the same machine)
- **Service name and SID:** only one of them needs to be filled in, preferably the Service name.
- **System password and Confirm password:** the password of the SYSTEM user in the database. The password is only used by the installer for the creation of the database user and table spaces, the installer does not store it.

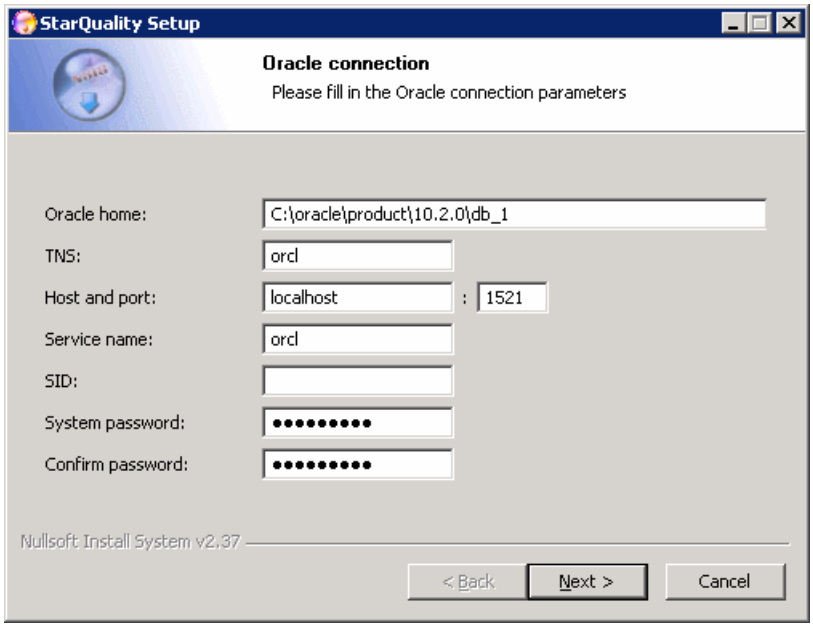


Figure 2-6: Oracle Connection Parameters

This page is not shown during the upgrade of an already successfully installed StarQuality. However if the installer detects some problem (for example the database user does not have the necessary rights) then the Oracle pages are shown. If this is the - the installer tries to recreate the database schema and run the upgrade scripts.

NOTE

During these steps the installer does not delete data from the database, therefore probably no damage is expected even if running on an already existing database schema; however database backup is recommended before continuing.

10 Click **Next**; Oracle Connection continues with Oracle tablespace parameters. If a tablespace already exists, specify whether it can continue or not. If the answer is yes, and it was created by a previous StarQuality installer, the uninstaller will offer dropping of that tablespace.

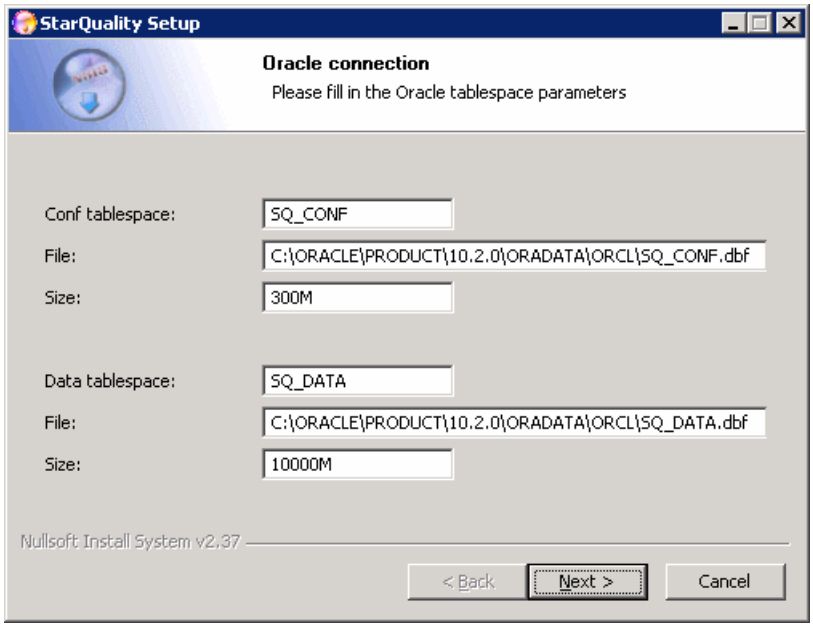


Figure 2-7: Oracle Connection - Tablespace Parameters

11 Click **Next**; Oracle Connection continues with Oracle user parameters similar to the previous page: if the user already exists, the installer asks whether it can continue or not. If the answer is yes and it was created by a previous StarQuality installer, the uninstaller will offer dropping of that user.

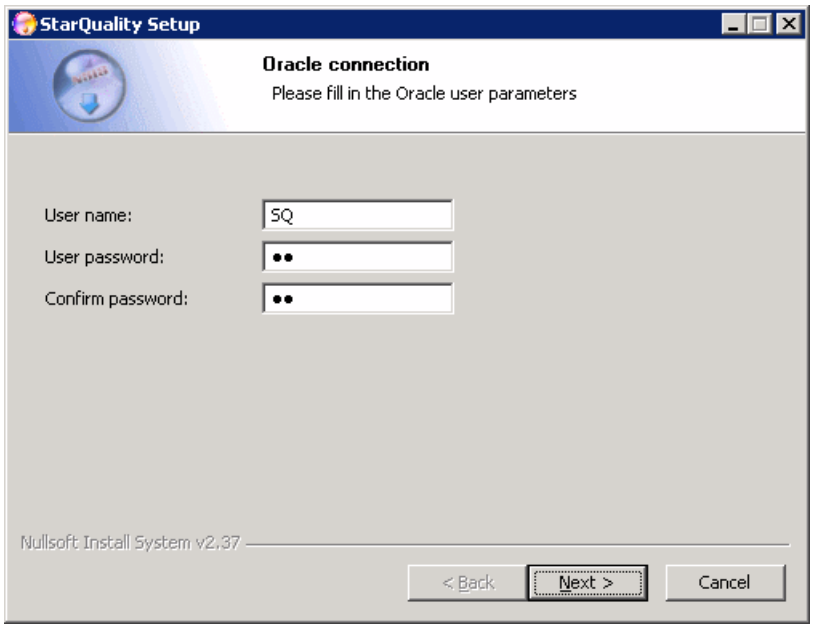


Figure 2-8: Oracle Connection - User Parameters

12 Click **Next**; The installer displays the Setup wizard and completes the installation.

If you are running a software upgrade, a warning appears before this page if the installer needs to perform some database schema upgrade.

Figure 2-9: StarQuality Setup Wizard - Completing Installation

13 Click **Finish** to close the wizard.

14 Open a Cygwin shell and enter the following command to activate the web interface:

```
/usr/sbin/apachectl start
```

15 Upload the license file using the WEB GUI, as follows:

a Open a web browser and go to http://<ip or hostname>/.

b Enter User Name and Password. The default admin users credentials are:

```
admin
admin123
```

The StarQuality opening window is displayed for a few moments and then the main interface window opens

c Place the licence file on the computer from which you activated the client.

d From Settings select Servers; the Servers tab is displayed.

e Select Licenses. The Licences Configuration window is displayed.

f Click **[Add new]** and browse for the file containing the license.

g Click **OK**. A list detailing the licenses is displayed.

h Verify that none of the entries in the license list are colored red.

16 Start the StarQuality, as described in "Starting and Stopping the System Using Commands" on page 31.

17 In the WEB GUI, from Settings select Server > Start/Stop/Status and verify that all the entries are green.

2.5 Uninstalling the StarQuality

The uninstallation can be initiated by running the *UninstallStarQuality.exe* in the Cygwin root directory or by using Start > Settings > Control Panel > Add or Remove Programs.

During the uninstallation the application asks whether it should delete the different components. If you want to keep a module which is dependent on another module, the application will not even ask to remove the other module. For example if you do not want to remove the *bash symbolic* link, it will not remove the Cygwin installation.

The only exception to this rule is the Oracle user: you can choose to keep it, but nevertheless the application will be uninstalled. The uninstaller is only able to drop the Oracle user and the tablespaces if the user fills in the SYSTEM password as shown below:

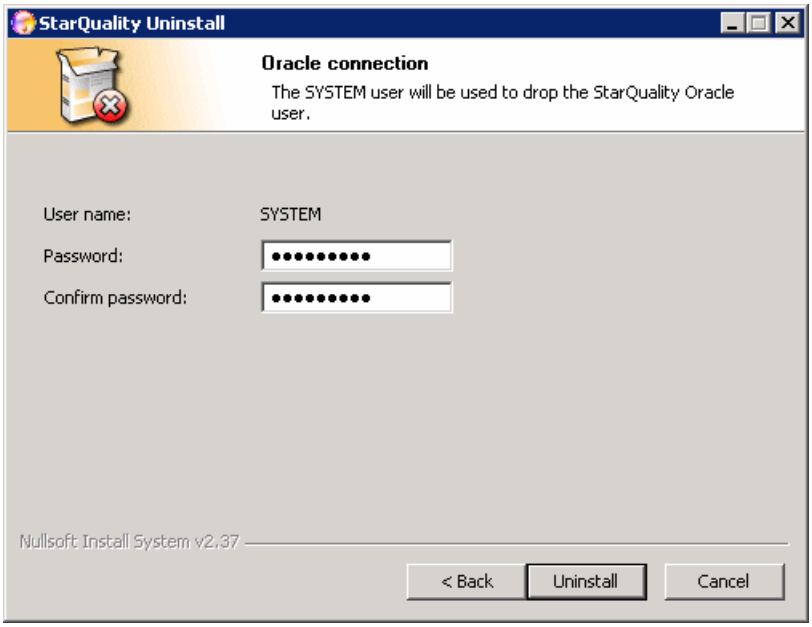


Figure 2-10: Uninstalling the Oracle User

2.6 Starting and Stopping the System Using Commands

To start the server:

Open a Cygwin shell and enter the commands:

```
/usr/sbin/apachectl start
/opt/starquality/bin/start_stop_pvsr start
```

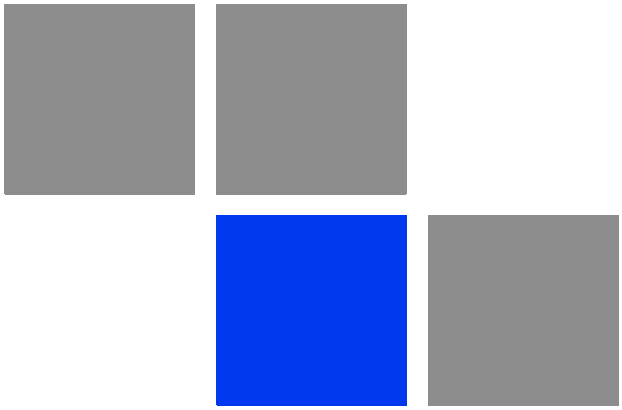
NOTE

If the Apache is started this way, the Cygwin shell should remain open. Closing it will cause the Apache service to shut down.

To stop the server:

Open a Cygwin shell and enter the commands:

```
/usr/sbin/apachectl stop
/opt/starquality/bin/start_stop_pvsr stop
```



Chapter 3

Getting Started

In this chapter:

- "Login" on page 34
- "The Structure of Interface Windows" on page 36
- "General Display Options" on page 37
- "The Menu System" on page 39
- "The Menu System" on page 39
- "Operations and Navigation in the Hierarchy" on page 42
- "Editing Objects" on page 44

3.1 Login

10 working clients may simultaneously use the system. Using the system is possible with the following web browsers:

- Microsoft Internet Explorer
- Mozilla Firefox

To start a client session with StarQuality:

1 Open a web browser and go to http://<ip or hostname>/.

2 Enter User Name and Password. The default admin users credentials are:

```
admin
admin123
```

The StarQuality opening window is displayed for a few moments and then the main interface window opens (see Figure 3-1).

3 You can proceed with discovering the network (see “Network Discovery” on page 45) or start monitoring the equipment.

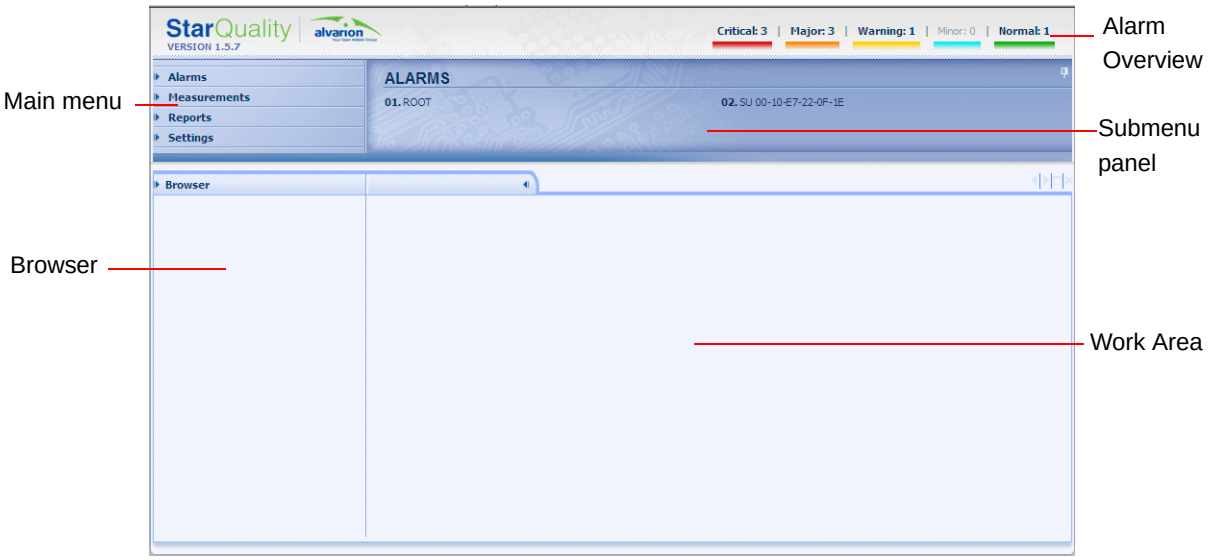


Figure 3-1: The StarQuality User Interface

3.2 The Structure of Interface Windows

The interface of the StarQuality application divides the browser window into several panels (see Figure 3-1):

- **Alarm overview bar** - displays current alarms, grouped by their severity level. This also acts as a shortcut to the alarm screens. The application displays only alarms that the user has permissions to view. If access to alarms is unavailable, the bar is completely missing.

- **The main menu** - contains the main operation tasks of the system: Alarms, Measurements, Reports, and Settings. Selecting each item on this menu opens various submenus and groups displayed in the submenu panel and in the browser. For detailed structure, refer to "The Menu System" on page 39.

- **Submenu panel** - the submenus under the selected menu item are displayed on the adjoining right hand side panel. This panel can be scrolled (up and down) using the arrows on its right edge. The submenu structure displayed here can be customized in order to accelerate the execution of frequently repeated navigation steps.

- **The browser** - located on the bottom left side of the user interface. The browser can contain further submenu items and special menu groups based on the chosen menu items in the upper menu system.

  Non-administrator users can only view those alarms/pieces of equipment/sites for which they have permissions. Refer to "User Types and Their Settings" on page 5.

  The user name and type appears in the title of the web browser window.

3.3 General Display Options

3.3.1 Scrolling or Hiding the Submenu Items

- If the name of a menu item is too long to display, it is abbreviated. To view the entire text as a tooltip, move the mouse pointer over it.
- To hide the entire menu system, click on the icon at the top-right corner of the panel (Figure 3-2). In this case the component can only be viewed if the mouse pointer is placed above it.
- To cancel the automatic hiding of the panel, click on the hiding icon again.

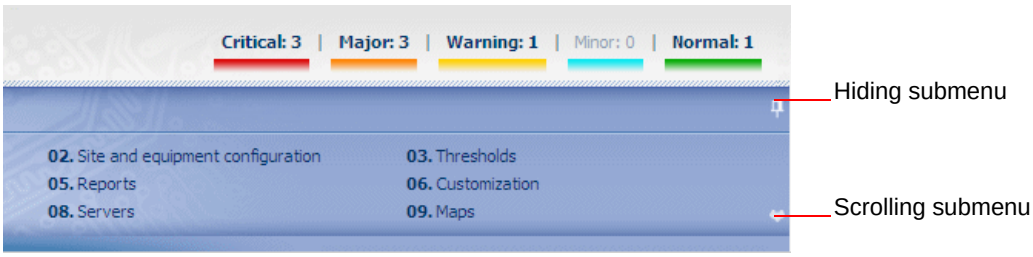


Figure 3-2: Scrolling and Hiding the Submenu

3.3.2 Using the Display Tabs

You can work with several open pages at the same time. The current page or pages currently in use are displayed as tabs. You navigate the opened pages with the tabs on the top of the pages. The selected page always comes up in the front. The tabs can also be scrolled horizontally.

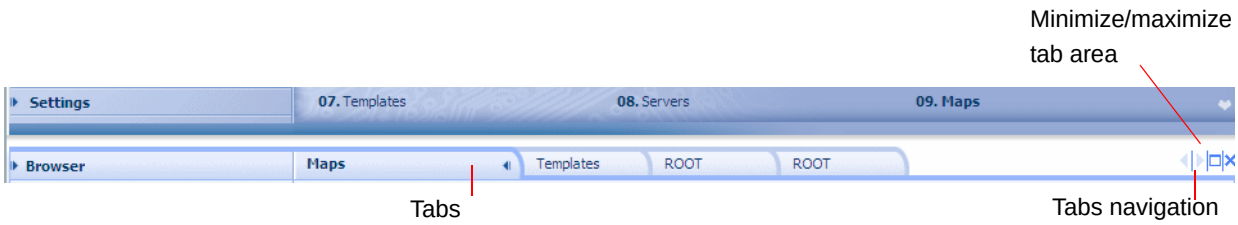


Figure 3-3: Navigation Tabs

When a page is put in the background, the browser window stores its content that is subsequently restored when the user chooses to display that page again.

If you select a menu item, the requested page is displayed instead of the current page. However, it is also possible to load the new page in a new tab. This is the default option when using the Alarms fast menu, while in the configurable menus you can select whether the new page should be displayed in a new or in an already existing tab.

To set the tab display options:

Use the following options to set the tabs display:

Table 3-1: Setting the Tab Display Options

To	Do this:
Select the tab display mode	Right-click on the menu items and select either “Open in a new tab” or “Open in tab: <already existing_tab_name>”.
Rename the tab	Click the tab title, type the name and press Enter.
Maximize/minimize the page to entire window	Use the icon at the top-right corner (see Figure 3-3)

3.4 The Menu System

The following sections describe the main menu, the submenus under it and the menu items and groups appearing in the browser:

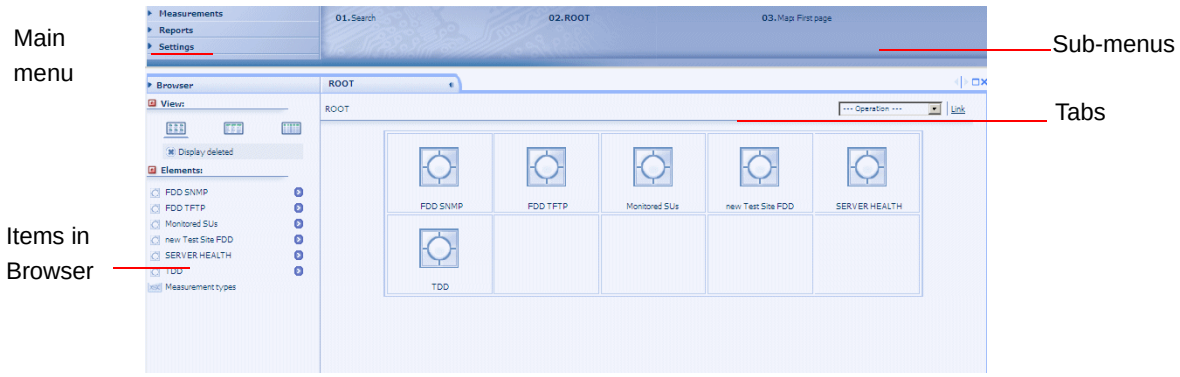


Figure 3-4: Example of Menus, Submenu Panel and Browser (in Measurements Menu)

3.4.1 Measurements

- In the submenu panel:
  - **Search** for sites, equipments, measurements and charts on the basis of sites/equipment names (see "Searching Measurements" on page 80)
  - Public and private menu items, for viewing the measurements below the chosen menu item
- In the Browser:
  - **View** menu group: Selecting the mode of display for the measurements (see "Measurements Display Options" on page 77)
  - **Chart Settings** - displaying the measurement values causing the alarms
  - **Elements**: Sorting and filtering of the measurements. This menu contains a site-equipment hierarchy based navigation tree. The root of the hierarchy is determined by the originally selected menu item. The

panel containing the menu group can be scrolled. (see “Viewing Measurement Data” on page 79)

- Element name, e.g. <FDD Network> - If the list contains too many elements, they are grouped by the system, using links pointing to the sub-lists. This is an example of a group of elements
- Monitored SUs - example of a group of elements
- Measurement Types - for filtering the measurements by their types

3.4.2 Alarms

- In the submenu panel: Public and private menu items, for viewing the alarms below the chosen menu item
- In the Browser:
  - **Time span** menu group: Choosing the alarms related to a given time interval: Real time - 5 min., Historical - by date (full days), hours (see “Viewing Alarms by Time Span” on page 107)
  - **View** menu group: Choosing the display mode for the alarms (see “Alarm View Options” on page 107)
  - **Filters** menu group: Filtering of the alarms to be displayed (see “Filtering Alarms” on page 111)

3.4.3 Reports

Naming the configured reports: Viewing the selected reports

Calendar: The reports are displayed with respect to the time interval selected in the calendar. Refer to “Reports” on page 114

3.4.4 Settings

For each item in the submenu panel, different items appear in the Browser. For non-administrator users, the submenus used to make changes are not displayed, and the other submenus are displayed selectively based on the access rights of the user.

- **Search:** Searching the configured objects based on sites/equipment names [see “The Menu System” on page 39).

- **Site and equipment configuration:** Configuring basic and virtual sites and equipment objects
- **Thresholds (admin only)** (see “Setting Alarm Thresholds” on page 84):
- **Event Configuration:** Not applicable.
- **Scheduled configurations (admin only):** Automatically scheduled configurations that the Job queue module could not yet execute successfully (see “Scheduled Configuration” on page 67)
- **Reports (admin only)**: Setting and viewing system reports (see “Reports” on page 114
- **Customization:** editing of “public” objects refers to the administrator users, while editing of “private” objects refers to the rest of the users (“Customization” on page 150):
- **Templates (admin only)**: Editing various system templates (see “Creating and Editing Threshold Templates” on page 87)
- **Servers (admin only)** (see “Server Configuration and Management (Admin only)” on page 163):
- **Maps (admin only)**: Not Applicable (Chart configuration)
- **Audit trail (admin only):** Displaying the individual configuration modifications (see “Audit Trail” on page 175)
- **User**: Managing user settings (see “User Administration (Admin only)” on page 178)

3.5 Operations and Navigation in the Hierarchy

In Alarms, Measurements and Reports pages (and also under the Settings > Site and Equipment Configuration submenu) there are three elements at the top of the page. These fields are always visible (even if the page is scrolled):

- The **Operations** pull down menu (located at the top-right), contains different options depending on the current object and menu item (see Figure 3-5):
  - » Fast navigation between the menu items while keeping the actual location within the hierarchy; for example, immediate opening of the measurement charts form the equipment configuration.
  - » A Print option for Alarms, Measurements and Reports, because this is the only possible way to print the full content of the main display area (the basic print function of the browser is not suitable for this)
  - » For Measurements, an option to save the current object as a menu item

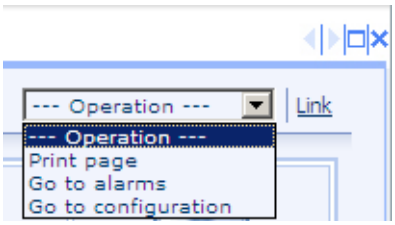


Figure 3-5: Operations pull down menu

- A path (at the top-left) showing the current location within the hierarchy. It is always possible to click on the elements of this list, except for the last one, and return to a higher hierarchy level.

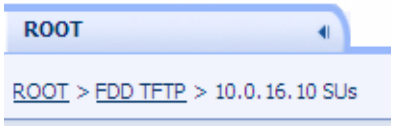


Figure 3-6: Hierarchy Path

If during the navigation you access an equipment through one of its virtual sites then after any equipment modification you cannot get back to that point in the virtual hierarchy, because the application will modify the current location according to the normal hierarchy, i.e. it will show the equipment under its parent site.

Notice that by using the fast navigation between the menu items (see the above bullet), the current location within the hierarchy might change: although the page will show the selected object, the path shown to the root object might be incorrect.

- For Alarms and Measurements, a **Link** option is also displayed at the top-right of the window, enabling a creation of a direct URL on the interface that can be used to open the current object directly in a new browser window.

3.6 Editing Objects

This section explains the general editing principles of the system. The various possibilities of editing different kinds of objects are discussed in detail in the corresponding sections.

The list of editable objects is displayed in a table that, with the exception of the Site-equipment-measurement Configuration page, contains the most important attributes of the objects.

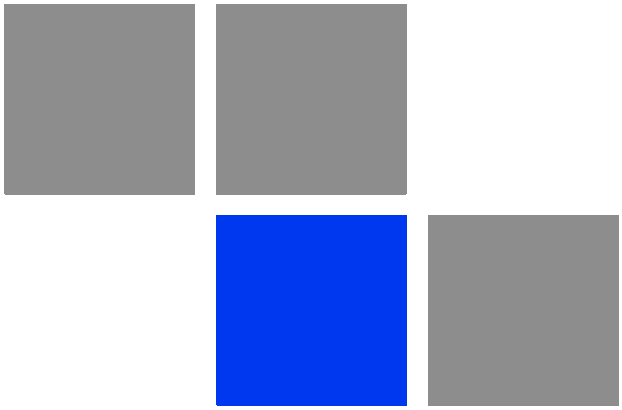
In the Settings menu you can edit the various objects of the system.

To edit objects:

Use one of the following options, when available:

Table 3-2: Editing Objects

To	Do this:	Comments
Delete an object (only if it has no sub-elements)	Click **[del]**	The system always prompts to confirm the action before it is executed.
Modify an oblect	Click **[edit]** and modify the parameters	Click **OK** or Cancel
Create a new simple object	Click **[add new]**	
Create objects based on a template	Click **[from template]**	
Create objects based on another object	Click **[copy from]**	
Perform other editing operations	Use the pull down menu available on the screen	Applicable in case of normal and virtual sites.



Chapter 4

Network Discovery

In this chapter:

- "Overview" on page 47
- "Discovery of WiMAX Devices" on page 50
- "Discovery of Equipment under a Server-Health Site" on page 55
- "Scheduled Configuration" on page 67

4.1 Overview

At first login, the system contains only a ROOT site. You build your new network (sites) under the ROOT to be able to start monitoring your equipment performance using the StarQuality.

Mapping the network in StarQuality can be done using various structures, such as by geographical locations, by topics, etc. This section describes the creation of a a WiMAX network and all the BTSs under it. In addition, it describes the creation of a utility network.

Following are available site types:

- WiMAX-equipment
  - WiMAX FDD SNMP - FDD versions 3.5/3.6, SNMP data collection - up to 10 SUs per BTS can be measured
  - WiMAX FDD TFTP - FDD version 3.7, TFTP data collection
  - WiMAX TDD - TDD versions 4.5 and later, TFTP data collection
- Server Health
  - AlvariSTAR Version 4.0 and later
  - Oracle
  - UNIX

The measurements can be viewed not less than 30 minutes following the initial collection for each device.

For more information on configuration, refer to Chapter 9 - “General Setting Options” on page 129.

To create a WiMAX network site under ROOT:

1. From Settings select Site and Equipment Configuration.
2. From the Creation dropdown menu select Create New Site.Fill in the site name (free text),and its description (optional).

3 Select a corresponding icon.

4 Select a Server Group (see Figure 4-1):

» For FDD 3.5/3.6 network - WiMAX FDD

» For FDD 3.7 network - WiMAX FDD TFTP

» For TDD network - WiMAX TDD

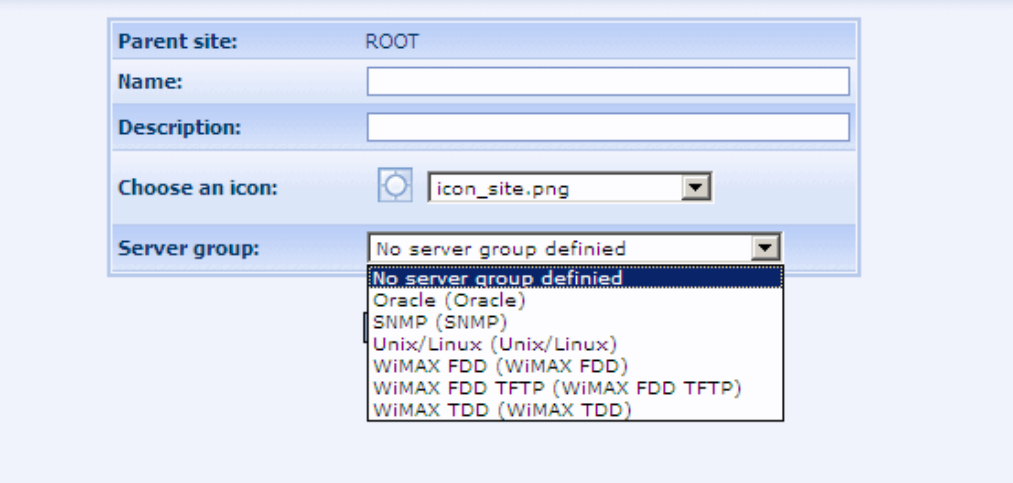


Figure 4-1: Creating a New Site - Server Group Selection

5 Click **OK**; The network site is created under the ROOT.

6 Proceed with discovery of devices according to the site type you created: refer to "Discovery of WiMAX Devices" on page 50)

To create a Server Health site under ROOT:

1 From Settings select Site and Equipment Configuration.

2 From the Creation dropdown menu select Create New Site. Fill in the site name (free text),and its description (optional).

3 Select a corresponding icon.

4 Select the SNMP Server Group (see Figure 4-1):

5 Click **OK**; The site is created under the ROOT.

6 Proceed with discovery of devices according to the site type you created: refer to “Discovery of Equipment under a Server-Health Site” on page 55

4.2 Discovery of WiMAX Devices

This section describes how to add BTSs to the network. Data collection is automatically activated after discovery, except for FDD ver3.5/3.6 SUs (SNMP Collection), for which data collection has to be activated manually.

In FDD SNMP, after populating the site with BTSs, you can collect data from up to 10 SUs per BTS in the site. These SUs have to be selected as described in "Activation of Data Collection" on page 52.

To discover any type of WiMAX devices:

1. Make sure the following prerequisites are available:
   - Setup and configuration:
     - StarQuality licence is uploaded
     - Servers (collectors) are up
     - Network connection between StarQuality machine and the device
     - StarQuality machine IP address is set as an authorised manager in the BTS (Note: Do not enable Trap Sending)
     - In each TFTP type device, PM/TM should be enabled
   - Information:
     - IP addresses of all the BTSs
     - Read SNMP Community of all the BTSs
     - The BTS type (FDD 3.5/3.6, FDD 3.7 or TDD)
2. In the WEB GUI, from Settings select Server > Start/Stop/Status and verify that all the entries are green.
3. From Settings select Site and Equipment Configuration.
4. Enter the site matching the equipment type to be discovered, by clicking its icon.
5. From the Creation drop down menu select Add Equipments (plural) from Template.

6 Select the template upon which to base the equipment setup:

- » WiMAX FDD TFTP - for FDD ver3.5/3.6
- » WiMAX FDD SNMP - for FDD ver3.7
- » TDD - for TDD

A basic setup template page is displayed.

NOTE

Each discovery can include a single equipment type. That is, you cannot combine FDD TFTP with FDD SNMP, TDD with any type of FDD, etc..

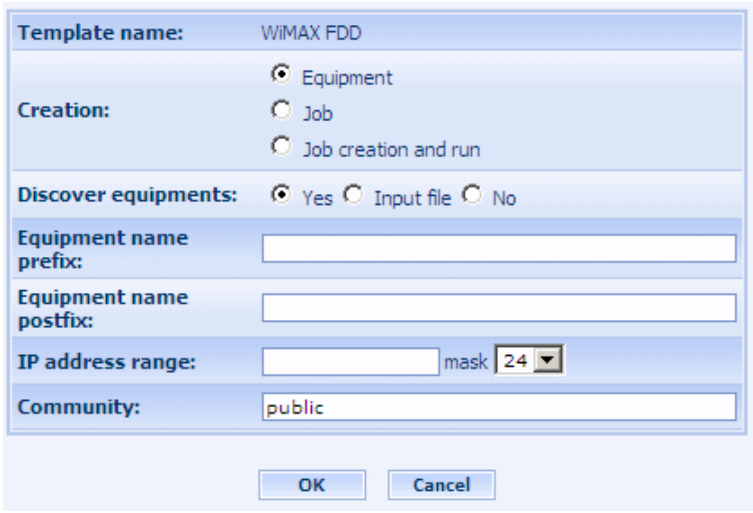


Figure 4-2: Creating New Equipments from Template - WiMAX FDD

7 In the Creation section make sure the Equipment option is selected.

8 In the Discover Equipments field select either:

- » No - to add equipments manually (see Step 10)
- » Input File - to upload a text file (See Step 11)

The Yes option is not applicable for WiMAX equipment.

9 In the Community section, override the Read community setting with the relevant one for your network.

10 If you selected No:

a Click **OK** ; the system returns to the main network list.

b Click **[Add new]** to add as many equipments as required.

c In each line enter: BTS name (free text up to 46 characters), description and IP address . Name and IP address are mandatory.

NOTE

Searching and displaying of devices in StarQuality is done by names only, therefore it is advised to keep a systematic naming convention, for example, it is recommended to name each device by its IP.

11 If you selected Input File:

a Prepare a text file, in which each line signifies a BTS. Each entry includes three columns in the following order: equipment name, equipment description and IP address. Allowed delimiters: semicolon (;) or tab. Save it as a .txt type file.

b In the StarQuality application click **Browse** to select this file.

c Click **OK**; the system returns to the main network list, loaded with device data from the uploaded file. You can edit this list as required.

12 Click **OK**; the system searches and discovers each existing and online BTS. For each discovered BTS a success message appears; For each unsuccessful discovery an error massage is displayed and the system continues to the next device.

13 When the discovery is complete, click **Back** to return to the network site.

14 Verify that all the equipments are not colored red, which means that their data is being collected.

15 Verify that for each BTS, a matching site has been created, named as the BTS with the postfix “SUs” (i.e, <btsname SUs>).

In case of BTS type of FDD SNMP (ver3.5/3.6), this SU site is colored red, which means that no SU under it are being collected yet.

16 For FDD SNMP SUs only, activate Data Collection for up to 10 SUs as described in Section 4.2.1.

4.2.1 Activation of Data Collection

When you create a site, data collection is by default activated for al AUs and SUs (except for FDD ver3.5/3.6 SUs).

In FDD ver3.5/3.6 (SNMP), SU performance collection is limited by the system to 10 SUs per BTS. Data collection is activated from within the SUs virtual sites, in which SUs should be entered manually one by one. If you created equipments for an FDD SNMP site, follow the next procedure describing how to activate data collection for FDD (SNMP) SUs. All the FDD ver3.5/3.6 SUs from which data is collected are also linked to an automatically generated virtual site named "Monitored SUs" placed under ROOT.

To activate data collection for any equipment type:

1 Click the site icon to enter the site.

2 For each equipment repeat the following (for FDD SNMP SUs, the maximum equipments to activate per BTS is 10):

a Click **[edit]** next to the equipment you want to activate. The following window is displayed (measurement types themselves may vary according to the specific equipment: SU, BTS, Server Health element):

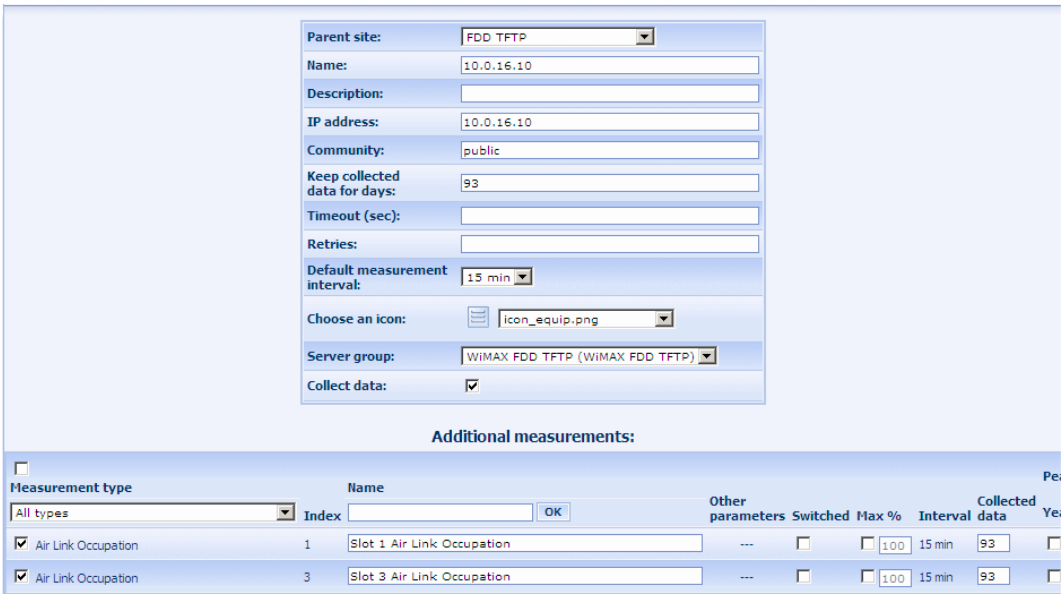


Figure 4-3: Activating Data Collection

b Select or deselect the Collect Data checkbox at the bottom of the upper table.

c Select or deselect the measurements you want to activte/deactivate in the lower table (in case of FDD SNMP SUs, all measurements are selected by default).

d Click **OK**.

e Go back one level in the navigation path and verify that the equipment line line is no longer red (acivated) or is red if deactivated (Figure 4-4).

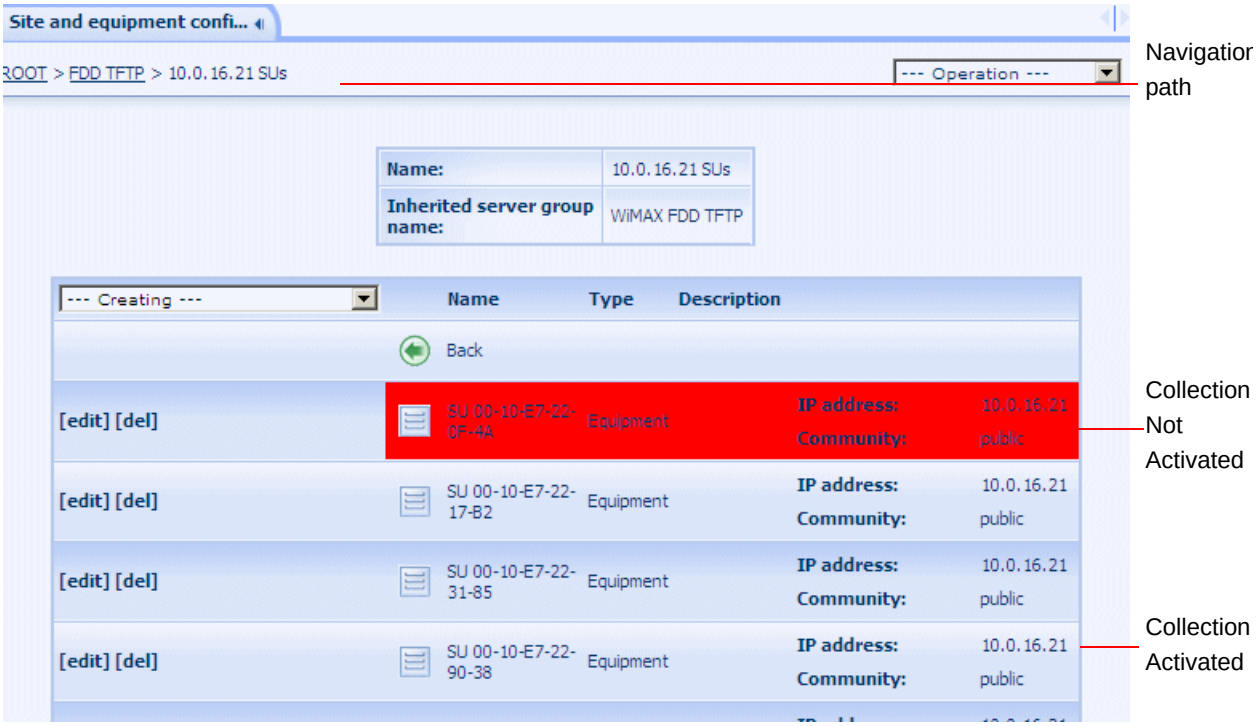


Figure 4-4: FDD ver3.5 SNMP SUs Data Collection Status

4.3 Discovery of Equipment under a Server-Health Site

This section describes how to add equipment related to server health to the StarQuality and initiate the data collection from them. For these equipment types, only a single device is discovered each time; that is, there is no multiple discovery.

You can use a template or create new equipment from scratch. The procedures in this section describe the recommended way of creating equipment from templates.

For more information refer to “Site and Equipment Configuration” on page 135, and “Creating New Equipment from Template” on page 139.

To add AlvariSTAR server:

1. Make sure the following prerequisites are available:
   - Setup and configuration:
     - Network connection between StarQuality and AlvariSTAR machines
     - AlvariSTAR ver4.0 and later
   - Information:
     - AlvariSTAR machine IP address
     - Read community of AlvariSTAR SNMP server (if not changed, default is: “public”)
2. From Settings select Site and Equipment Configuration.
3. Click the **Server Health** icon to enter its site.
4. From the Creation drop down menu select Add Equipment from Template.
5. Select the template upon which to base the equipment setup: AlvariSTAR.
6. Click **OK**. A basic setup template page is displayed.

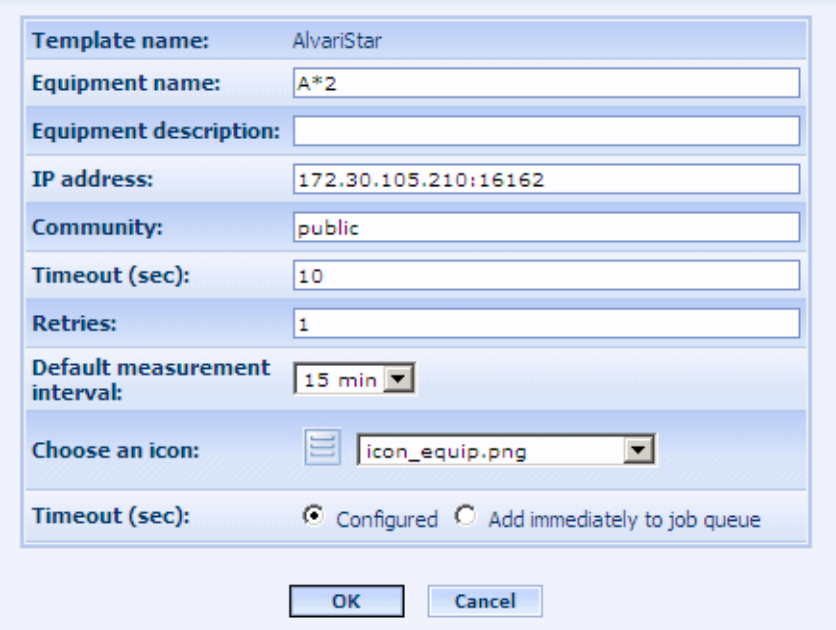


Figure 4-5: Creating New Equipment - AlvariSTAR

7 Fill in the required information (for paremeter information and description refer to "Creating New Equipment from Template" on page 139):

- Name and description - free text
- IP address: <ip address>:<16162>
- Community: public
- Leave all other fields with their default values.

8 Click **OK**; Discovery is running and can take up a few minutes. The following window is displayed. The green field means that collection is activated by default.

Figure 4-6: Data Collection Active

9 If you wish to edit the specific counters collected, select Modify Equipment from the Operations drop-down menu.

10 choose specific measurements or all measurements by selecting the corresponding check-boxes.

11 Scroll down and click **OK** to implement changes.

To add an Oracle database server:

1. Make sure the following prerequisites are available:
   - Setup and configuration:
     - Network connection between StarQuality and Oracle machines
   - Information:
     - Oracle TNS name - in case StarQuality and Oracle are on the same machine: Oracle server TNS; in case StarQuality and Oracle are on separate machines: Oracle client TNS (TNS name is defined in the file tnsnames.ora placed in the directory: ORACLE_HOME\NETWORK\ADMIN
     - Password of Oracle SYSTEM user
2. From Settings select Site and Equipment Configuration.
3. Click the **Server Health** icon to enter its site.
4. From the Creation dropdown menu select Add Equipment from Template.
5. Select the template upon which to base the equipment setup: Default Oracle.
6. Click **OK**. A basic setup template page is displayed.

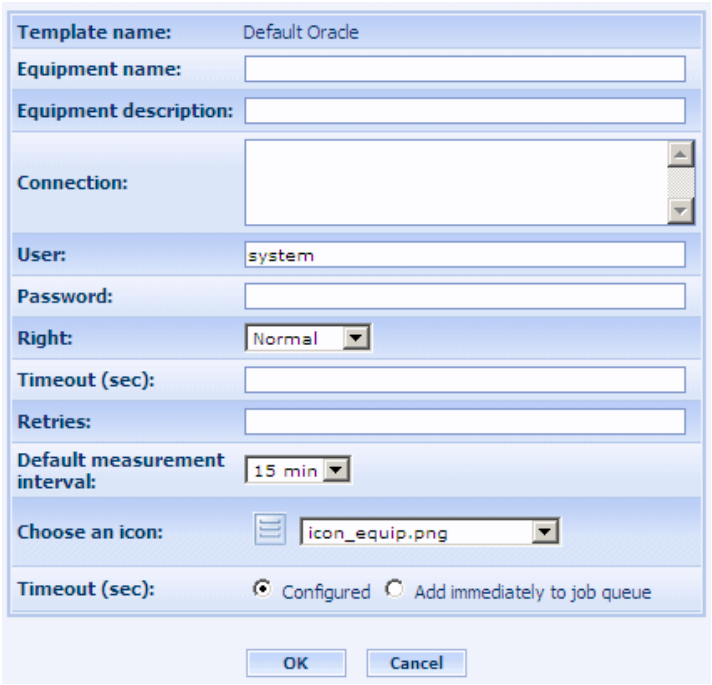


Figure 4-7: Default Oracle Template

7 Fill in the required information (for paremeter information and description refer to "Creating New Equipment from Template" on page 139):

- Name and description - free text
- Connection: <TNS name>
- User: system
- Password: SYSTEM password
- Right: SYSDBA/SYSOPER/Normal, according to security preferences
- Leave all other fields with their default values

8 Click **OK**; Discovery is running and can take up a few minutes. The following window is displayed. Red fields mean that collection is not activated by default.

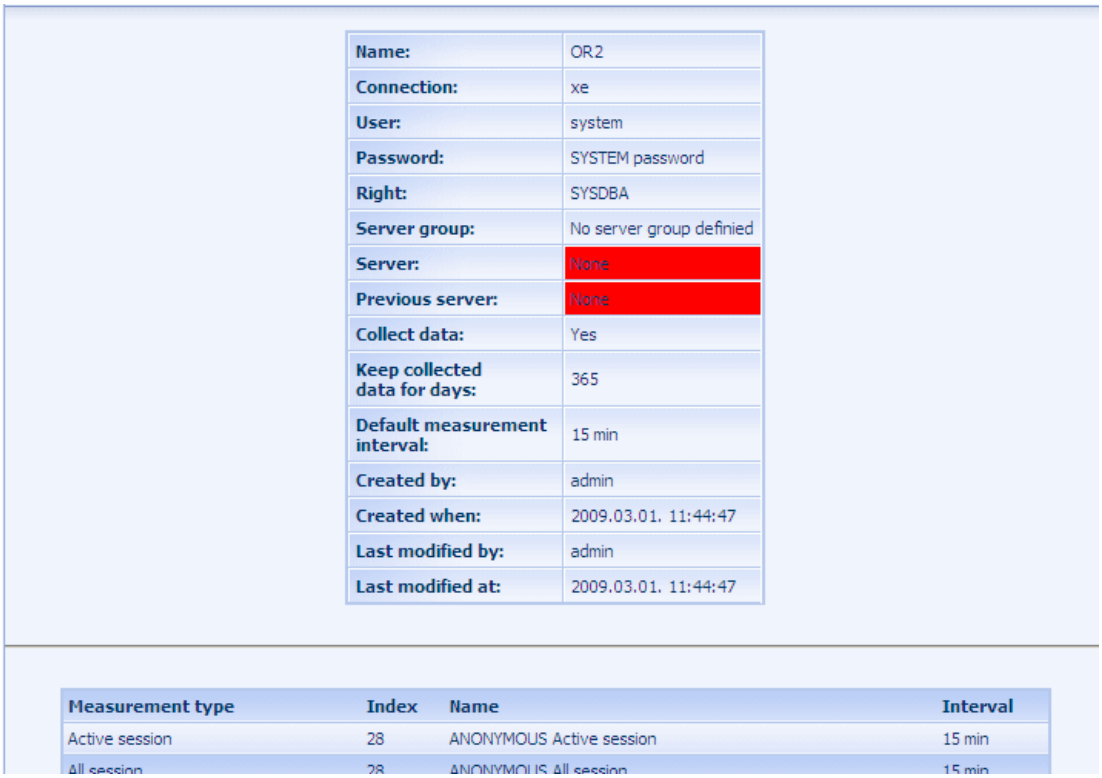


Figure 4-8: Network Discovery Results (Oracle)

9 To start collecting select from the Operations drop-down menu Modify Equipment. The following window is displayed.

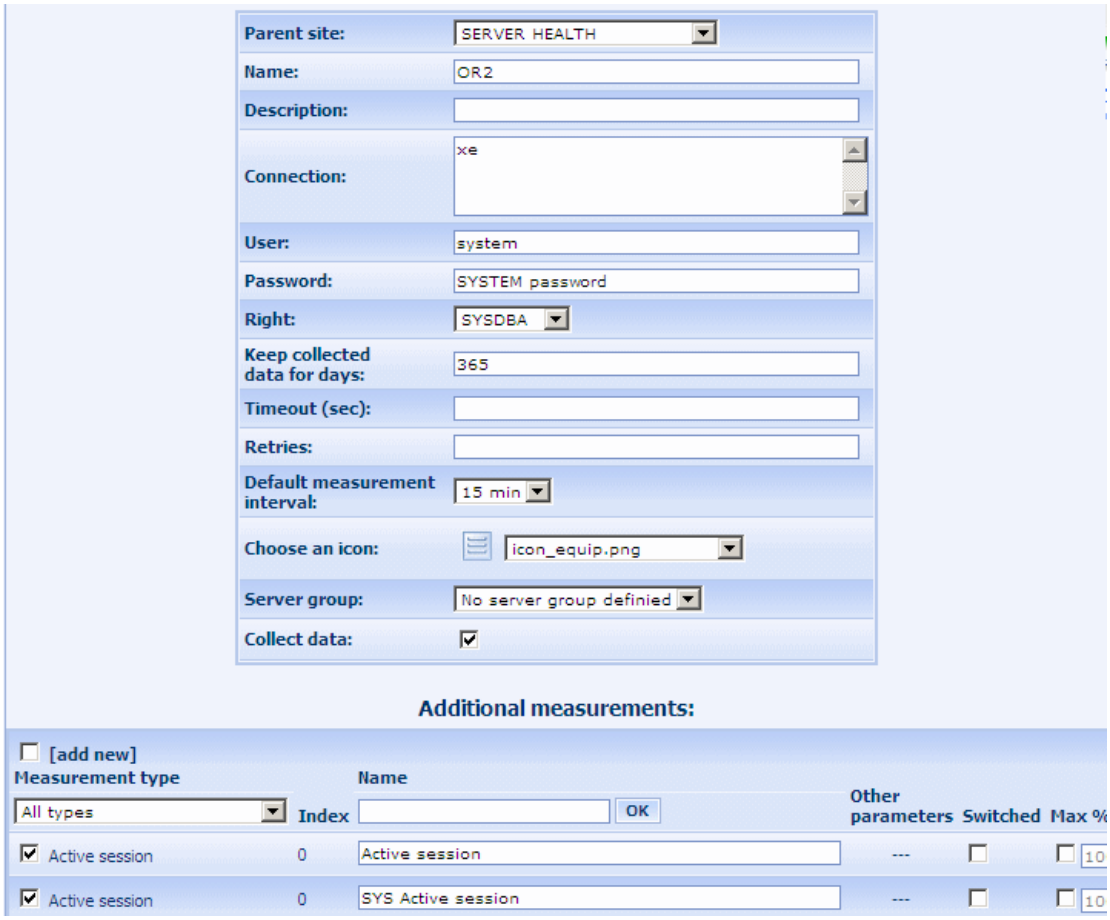
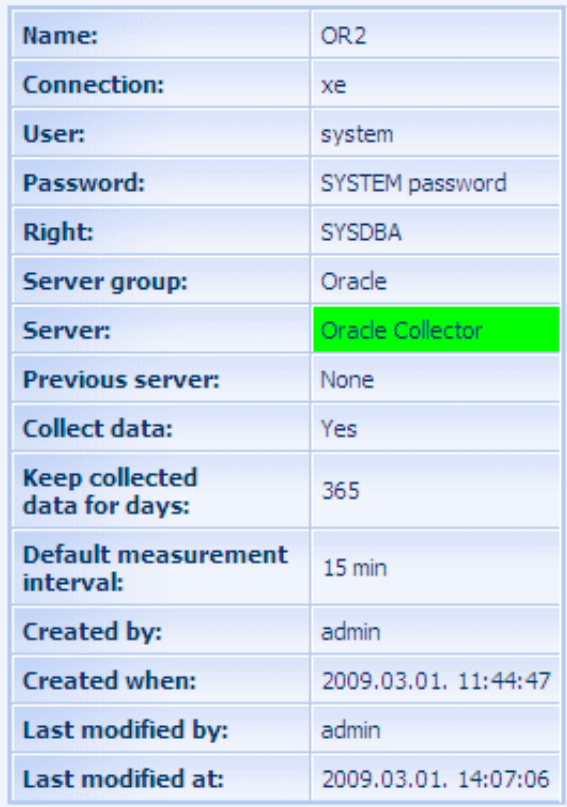


Figure 4-9: Activating Data Collection (Oracle)

10 Change Server Group to Oracle, and choose specific measurements or all measurements by selecting the corresponding check-boxes.

11 Scroll down and click **OK** to implement changes. The Server field turns green which indicates that collection is active.



Name:	OR2
Connection:	xe
User:	system
Password:	SYSTEM password
Right:	SYSDBA
Server group:	Oracle
Server:	Oracle Collector
Previous server:	None
Collect data:	Yes
Keep collected data for days:	365
Default measurement interval:	15 min
Created by:	admin
Created when:	2009.03.01. 11:44:47
Last modified by:	admin
Last modified at:	2009.03.01. 14:07:06

Figure 4-10: Data Collection Active (Oracle)

To add equipment under the UNIX/Linux site:

1 Make sure the following prerequisites are available:

- Setup and configuration:
  - Network connection between StarQuality and UNIX machines
- Information:
  - IP address of UNIX machine
  - UNIX user name and password. The prompt for the user used for discovery must have the following pattern: end with a space or have a >, #, %, or $ character followed by a space.

2 From Settings select Site and Equipment Configuration.

3 Click the **Server Health** icon to enter its site.

4 From the Creation drop down menu select Add Equipment from Template.

5 Select the template upon which to base the equipment setup: Default Unix/Linux.

6 Click **OK**. A basic setup template page is displayed.

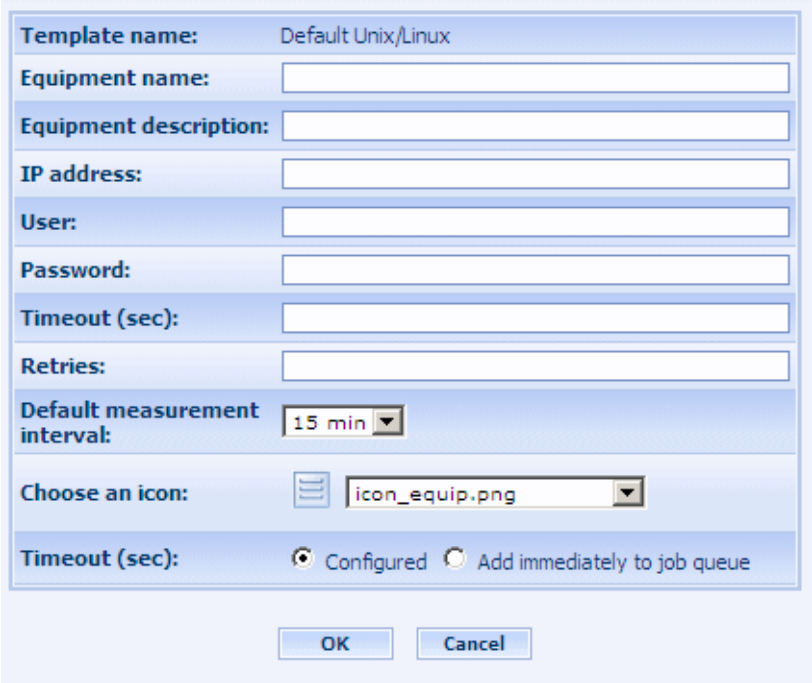
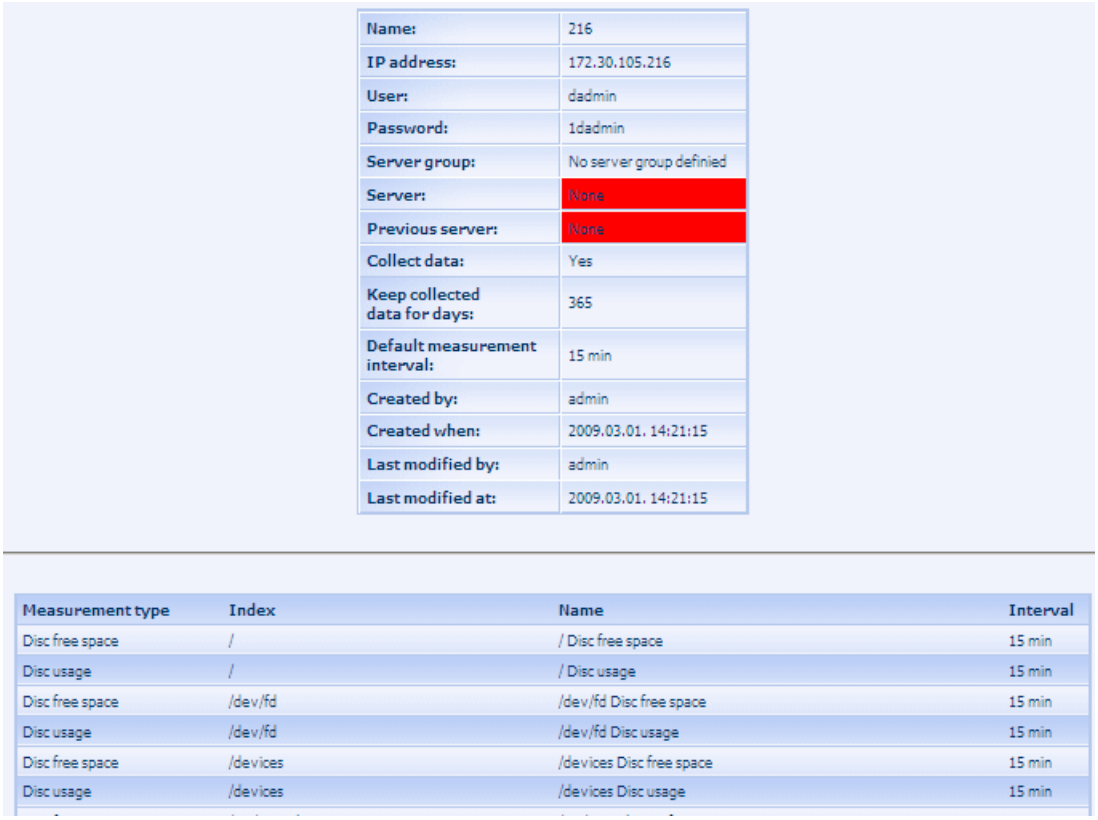


Figure 4-11: Default Unix/Linux Template

7 Fill in the required information (for paremeter information and description refer to "Creating New Equipment from Template" on page 139):

- Name and description - free text
- IP address: <ip address>
- User: <root>
- Password: <root password>
- Leave all other fields with their default values

8 Click **OK**; Discovery is running and can take up a few minutes. The following window is displayed. Red fields indicate that collection is not activated by default.



Name:	216
IP address:	172.30.105.216
User:	dadmin
Password:	1dadmin
Server group:	No server group definied
Server:	None
Previous server:	None
Collect data:	Yes
Keep collected data for days:	365
Default measurement interval:	15 min
Created by:	admin
Created when:	2009.03.01. 14:21:15
Last modified by:	admin
Last modified at:	2009.03.01. 14:21:15

Measurement type	Index	Name	Interval
Disc free space	/	/ Disc free space	15 min
Disc usage	/	/ Disc usage	15 min
Disc free space	/dev/fd	/dev/fd Disc free space	15 min
Disc usage	/dev/fd	/dev/fd Disc usage	15 min
Disc free space	/devices	/devices Disc free space	15 min
Disc usage	/devices	/devices Disc usage	15 min

Figure 4-12: Network Discovery Results (Unix/Linux))

9 To start collecting select from the Operations drop-down menu Modify Equipment. The following window is displayed.

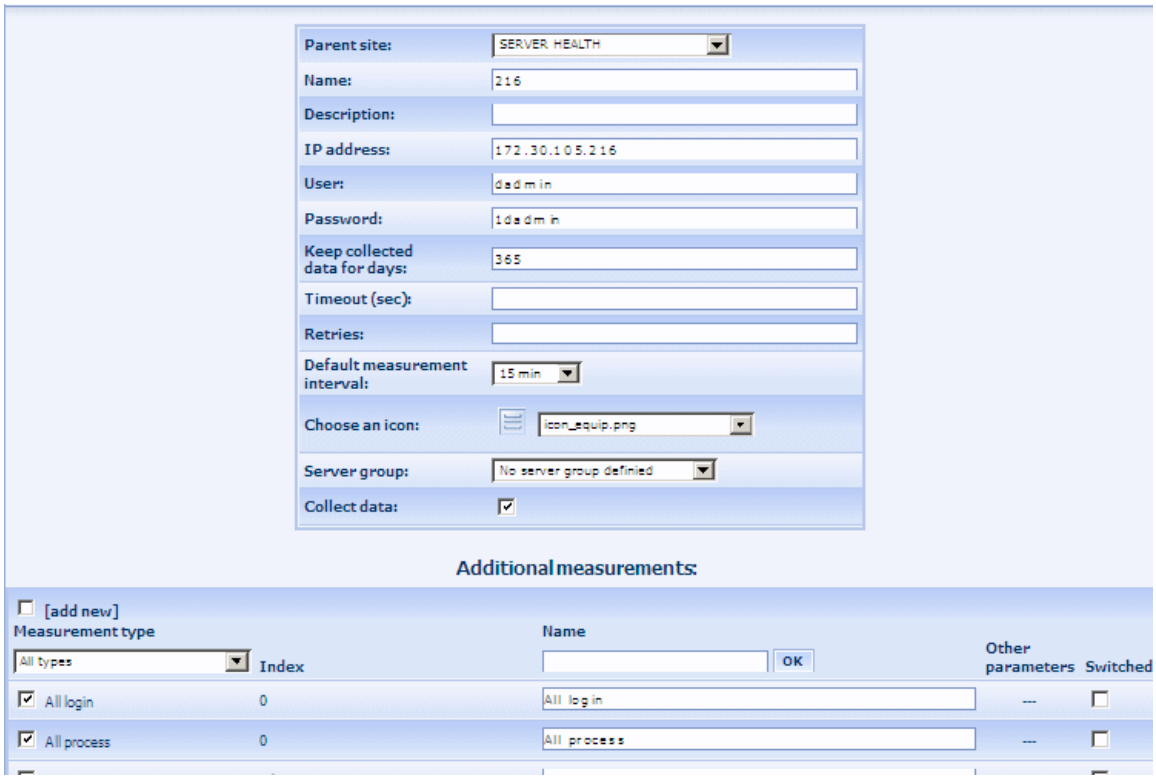


Figure 4-13: Activating Data Collection (UNIX)

10 Change Server Group to Unix/Linux, and choose specific measurements or all measurements by selecting the corresponding check-boxes.

11 Scroll down and click **OK** to implement changes. The Server field turns green which implies that collection is active.

Name:	216
IP address:	172.30.105.216
User:	dadmin
Password:	1dadmin
Server group:	Unix/Linux
Server:	Unix/Linux Collector
Previous server:	None
Collect data:	Yes
Keep collected data for days:	365
Default measurement interval:	15 min
Created by:	admin
Created when:	2009.03.01. 14:21:15
Last modified by:	admin
Last modified at:	2009.03.01. 14:31:50

Figure 4-14: Data Collection Active (UNIX)

4.4 Scheduled Configuration

In case the equipment is not available when you edit the configuration (discovery), you can display the configuration details using the Scheduled Configuration page from Settings.

Restricted administrators can view or edit a scheduled configuration only if they have permission to its parent site.

To set the equipment for scheduled discovery:

1 Follow the steps in "To discover any type of WiMAX devices:" on page 50, with the following change:

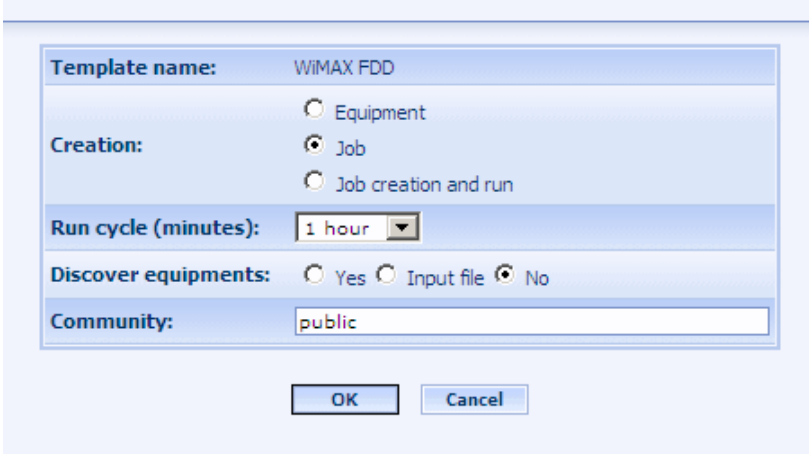


Figure 4-15: Setting Discovery to a Schedule

2 In the Creation section select either:

- Job - the system creates scheduled jobs based on the parameters but does not run them
- Job creation and run - the system creates scheduled jobs based on the parameters and runs them immediately. If the equipment creation for a job is not successful, it is not deleted, and therefore the Job queue server component can try it later

3 Define the Run Cycle.

4 In the Discover Equipments field select No - to add equipments manually.

5 Define the Community.

6 Click **OK**.

To use the Scheduled Configuration:

1 From Settings select Scheduled Configuration; The Scheduled Configuration table is displayed, with the following columns:

Table 4-1: Scheduled Configuration

Item	Description
Links	**[edit]** - the entry can be edited **[del]** - the entry can be deleted [now] - the system is trying to instantiate the configuration belonging to the entry immediately and does not wait for the next cycle
Site name	The equipment will be placed to this site
Template name	The system will instantiate the equipment using this template
Equipment name	The same name as in the manual creation of the equipment
Equipment description	The same as in the manual creation of the equipment
IP address	equipment IP address
Community	Equipment read SNMP community
Keep data for days	The value of the appropriate equipment parameter
Default interval	The value of the appropriate equipment parameter
Next run	The next time the system will try to configure the the equipment
Run cycle (minutes)	In case of an unsuccessful attempt, the time period (in minutes) before retrying

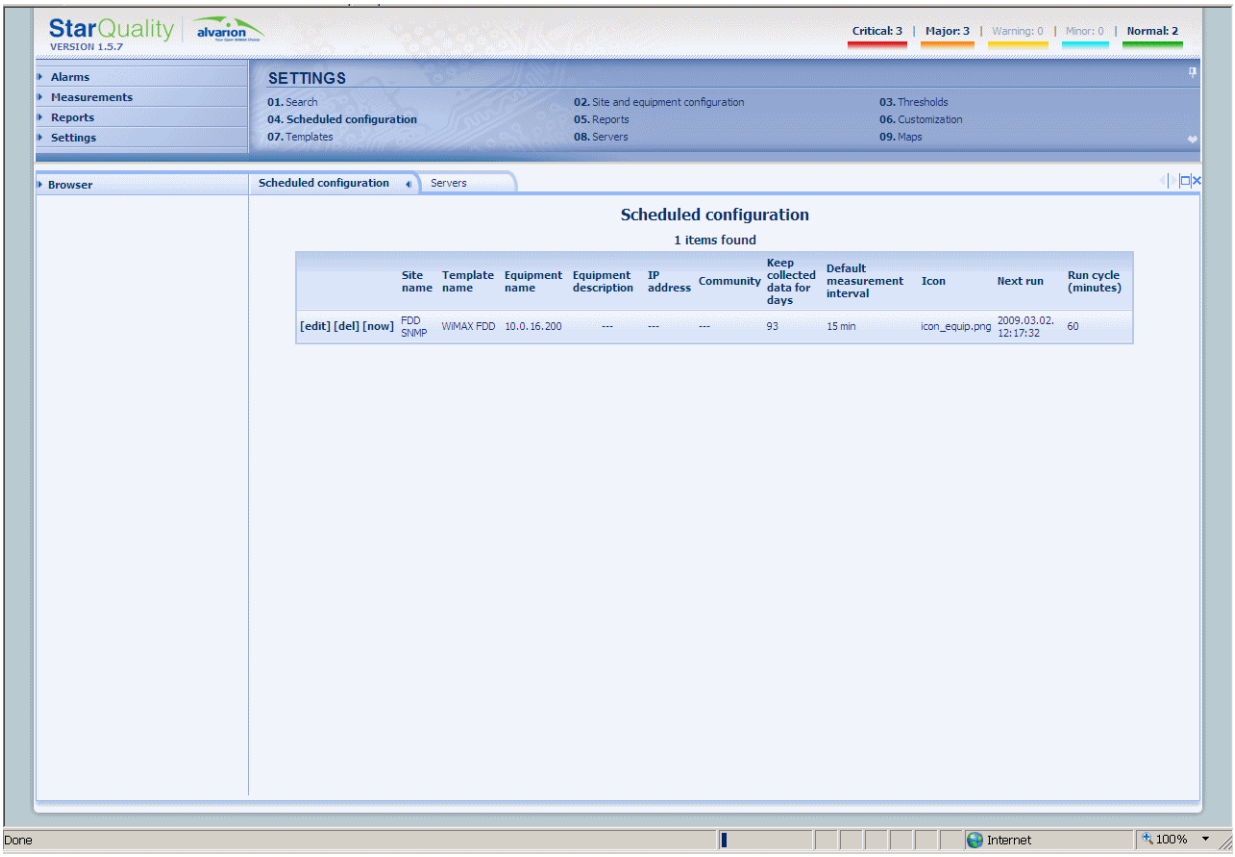


Figure 5: Scheduled Configuration

2 Do one if the following:

» To modify the task parameters, click **[edit]**; The same parameters (except for the retrying time) can be modified as at template based creation.

The IP address, SNMP Community and SNMP version fields are also displayed.

» To delete a scheduled task, click **[del]**

» To try and execute the entry immediately and not wait for the next run, click **[now]**.

Chapter 5

Viewing Measurements

In this chapter:

- "Introduction" on page 72
- "Measurements Browsing Options" on page 76
- "Measurements Display Options" on page 77
- "Viewing Measurement Data" on page 79
- "Searching Measurements" on page 80
- "Saving Items as A Submenu" on page 83

5.1 Introduction

Viewing measurements is available using a configurable quick menu at the top panel for displaying and navigation. New elements can be added to the page using the Settings > Customization menu (see “Customization” on page 150).

The Browser is also available for displaying, navigation and filtering in the site-equipment-measurement hierarchy, and it shows the measurements according to the measurement type.

Only those objects (sites, equipments, or measurements) for which the user has permissions are accessible.

The figure below shows the Browser and the Icon view of the selected hierarchy level (Root).

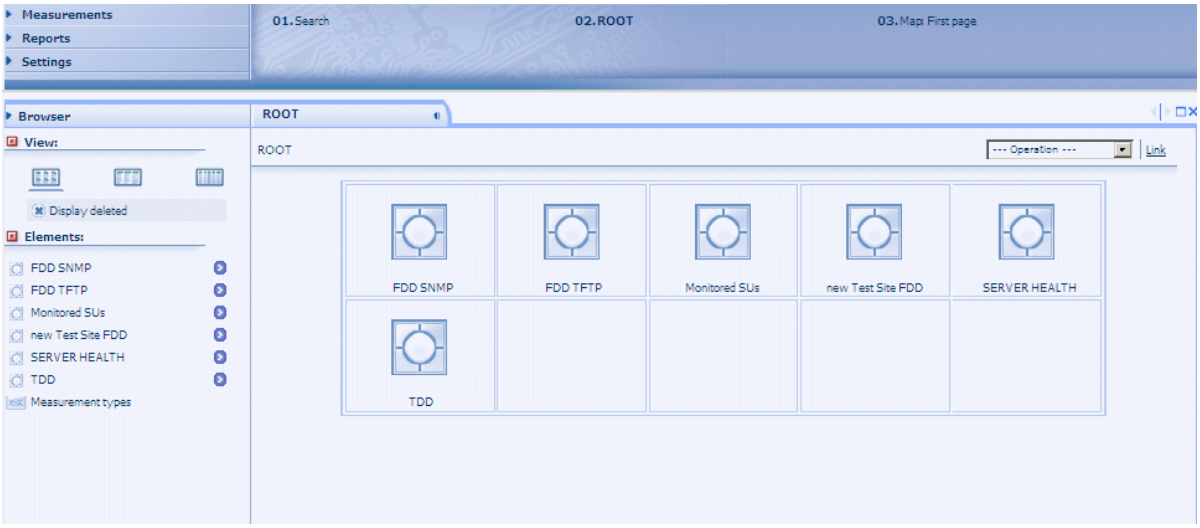


Figure 5-1: The Measurements Main Menu Item with the Browser and the Icon View

5.2 WiMAX Equipment Measurements

This section describes the various measurements, or calculations, available in StarQuality. Two types of measurements are available:

- Traffic (AU side) - providing information that can be used for analyzing capacity utilization and resources availability.
- Performance (SU side) - providing information on the quality of wireless links between Subscriber Units and Base Station.

5.2.1 Traffic Measurements

The StarQuality application retrieves traffic measurements from the managed devices every 15 minutes and calculates utilization and capacity usage for this time interval.

The following traffic counters are available for each AU/FDD Micro Base Station.

Each counter is available for both Downlink (DL) and Uplink (UL):

Table 5-1: Traffic Counters

Counter	Description
Air Link Occupation (%)	The utilization of available wireless link resources: Total used symbols during the collection period as a percentage of total symbols available.
Subscription (%)	The throughput (based on the total traffic rate taking into account the unusable gap period in each frame) as a percentage of total provisioned MIR. The higher this value, the higher is the actual utilization by users of the provisioned MIR.
MIR+CIR Allocated (bits per second)	The Total Maximum Information Rate (MIR for all BE and NRT services and CIR for RT and CG services) provisioned to connected SUs.
CIR Allocated (bits per second)	The Committed Information Rate (CIR for NRT, RT and CG services) provisioned to SUs connected to the AU/FDD Micro Base Station.

Table 5-1: Traffic Counters (Continued)

Counter	Description
Throughput (bits per second- bps)	Total symbols used considering rates.
Capacity Rate (bps)	
Total Used Capacity Rate 1	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 1 (BPSK 1/2).
Total Used Capacity Rate 2	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 2 (BPSK 3/4). Not applicable for TDD
Total Used Capacity Rate 3	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 3 (QPSK 1/2).
Total Used Capacity Rate 4	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 4 (QPSK 3/4).
Total Used Capacity Rate 5	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 5 (16QAM 1/2).
Total Used Capacity Rate 6	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 6 (16QAM 3/4).
Total Used Capacity Rate 7	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 7 (64QAM 2/3).
Total Used Capacity Rate 8	The total traffic rate* that passed through the AU/FDD Micro Base Station using rate 8 (64QAM 3/4).
Number of connected SUs	SUs with active services
BTS Uptime (Seconds)	BTS uptime in seconds

5.2.2 Performance Measurements

Performance counters include the uplink/downlink RSSI (Received Signal Strength Indicator), SNR (Signal to Noise Ration) and modulation rate (from rate 1 (BPSK 1/2] to rate 8 [64QAM 3/4]) measurements for all SUs.

For each measurement three values are displayed: Average, minimum and maximum for the sampled 15 minutes.

Note the following regarding FDD ver3.5/3.6 SUs:

- The number of SUs is limited to 10 per BTS
- Only the value at the time of sampling is displayed for each measurement

Table 5-2: Performance Counters (File Collection)

Counter	Description
Uplink RSSI Average/Max/Min (dBm)	The average/maximum/minimum RSSI value of the signal from the SU measured at the AU/FDD Micro Base Station for the past 15 minutes.
Downlink RSSI Average/Max/Min (dBm)	The average/maximum/minimum RSSI value of the signal from the AU measured at the SU (and reported over the air to the Base Station equipment) for the past 15 minutes.
Uplink SNR Average/Max/Min (dB)	The average/maximum/minimum SNR value of the signal from the SU measured at the AU/FDD Micro Base Station for the past 15 minutes.
Downlink SNR Average/Max/Min (dB)	The Average/maximum/minimum SNR value of the signal from the AU measured at the SU (and reported over the air to the Base Station equipment) for the past 15 minutes.
Uplink Rate Average/Max/Min	From rate 1 (BPSK 1/2) to rate 8 (64QAM 3/4)
Downlink Rate/Average/Max/Min	From rate 1 (BPSK 1/2) to rate 8 (64QAM 3/4)

5.3 Measurements Browsing Options

You can find a specific device data using three methods:

- Navigating the path from the Measurement menu - click **ROOT** or **Network/Monitored SUs** sites and then click the equipment icons.
- Searching for a specific equipment - see “Searching Measurements” on page 80
- Creating a specific sub-menu as a shortcut - see “Saving Items as A Submenu” on page 83

5.4 Measurements Display Options

Three display types are available in the View group:

- **Icon:** (as in Figure 5-1) the elements of the hierarchy level under the selected item are shown with a big icon and name, up to 5 items in a row. The navigation can be continued by clicking on the icons.
- **List**: the elements appear with a small icon and name, which makes it possible to view many objects on a small screen.
- **Detailed**: elements are listed under each other with a small icon, name and description. Navigation is also performed by clicking on the icon.

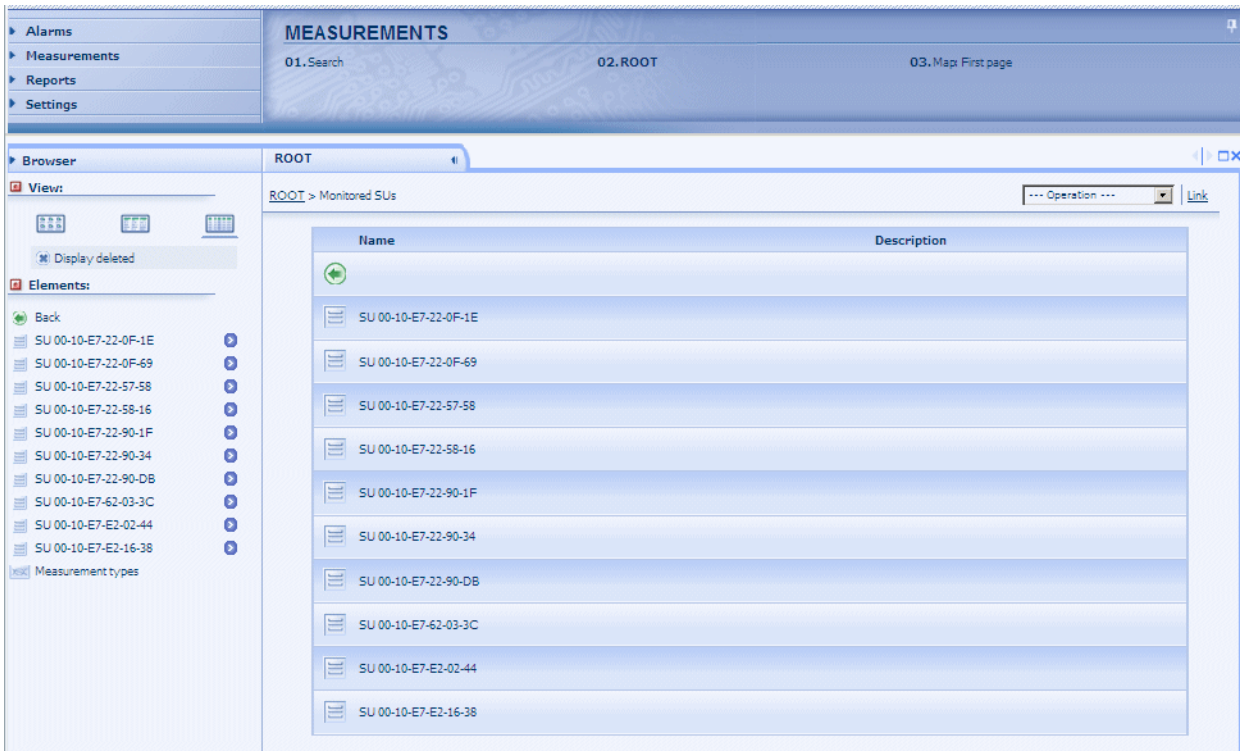


Figure 5-2: Navigation between Measurements: Detailed View

5.4.1 Element Browsing Options

The Elements group of the Browser also serves for the orderly display of the elements. The elements appear in a list, marked with a mini icon and a ► symbol.

If there are too many pieces of equipment on the current level, the Browser automatically groups them.

On the bottommost line of the Browser, you can browse all measurement types that are defined for the equipment under the current hierarchy level.

To browse elements:

Do one of the following:

- Click on the name of the object to continue the navigation on the left side.
- Click on the ► symbol to browse to the selected site or equipment; the elements under the selected equipment also appear in the currently active tab.
- In case of many equipments, click on a group to “unfold” it. The system stays at the same level, so clicking does not mean a hierarchy level changed.
- Click **Measurement Types** to navigate the hierarchy and display only the elements that include the selected measurement type.

5.5 Viewing Measurement Data

After reaching the equipment level using one of the navigation methods described above, the measurement results can be reviewed in chart format by selecting the concrete equipment.

Note that the elements in the main part of the display and in the **Elements** group of the **Browser** pane are not necessarily corresponding, that is, the StarQuality draws automatically only the fewest charts possible.

Also, because of minimizing the required chart drawings, the StarQuality draws only the first 20 charts, and the others are visible only when scrolling down the page.

You can set the chart display options in the View group:

- **Large Charts**: the charts appear in one column
- **Medium Charts**: the charts appear in two columns
- **Small Charts**: the charts are arranged in a three column table

A chart always uses the whole available area, that is, if you hide the menu system using the expand page icon, or change the shape of the Browser window, then StarQuality redraws the chart(s) accordingly.

You can define the time span of measurements to be displayed. The following view options are available:

Table 5-3: Time Span Options

Icon	Tooltip	Description
	Realtime view	the data is updated periodically
	Historical view by date	A calendar is displayed. Select the desired day, week, month, and year to dispaly measurements for that time span
	Historical view by time	Specify the time interval (hours, seconds, etc.)

You can also export the measurement data to Excel by clicking the **Export to XLS** link at the top-right corner of each chart.

5.6 Searching Measurements

5.6.1 On Searching in General

Search strings are entered frequently in the StarQuality application in order to search by text or to filter the results. There are two types of searching methods: the complex search system, accessed from the Search menu item, and the simple filter system, used in other places.

For the Search menu item, the StarQuality application performs character based, case insensitive “whole text” matching.

Four special characters can be used in the search string:

- _ (underline) or ? (question mark): matches an arbitrary character
- % (percentage) or * (asterisk): matches zero or more arbitrary characters

Therefore, for example, the “_apple%” search string results in all names whose second to sixth characters are “apple” (regardless of case), followed by an arbitrary string of characters, that is, for example “Xapple123”, “aApPle”, “1AppleTree”, etc.

In other cases (filtering, charts editing, etc.), the StarQuality distinguishes small and capital letters, but the [?] and [*] characters do not have the special meaning mentioned above.

For more information, refer to “Search (Admin only)” on page 134 (in Chapter 9, Settings)

Search is relevant to names of sites, equipment, etc. but not to IPs.

You can use the Measurements > Search menu item for displaying actual measurements.

After searching, use the `[view]` link next to the equipment to view the measurement charts.

To start searching for a measurement:

Specify a searching string, using one of the following methods:

1 Simple search: type the string directly in the input field, and click **OK**.

2 Click **Advanced Search**; an advanced window is displayed, which facilitates the construction of the searching string and contains the following insert fields:

a **Search to parent name (Yes/No):** If rou select “yes” the search finds those objects whose parent name meets the conditions (e.g. the parent is the containing site for a piece of equipment).

b **Name:** name of the object to be searched. The _ and ? characters match an arbitrary single letter, while % and * match an arbitrary string. The expressions in separate lines will be in OR relation with each other.

c **Without:** characters to be ignored by the system (the format is the same as above)

d **Type:** the type of the object to be searched. Subtype can also be given for equipment, equipment template and measurement type.

e **Results count:** maximum number of results

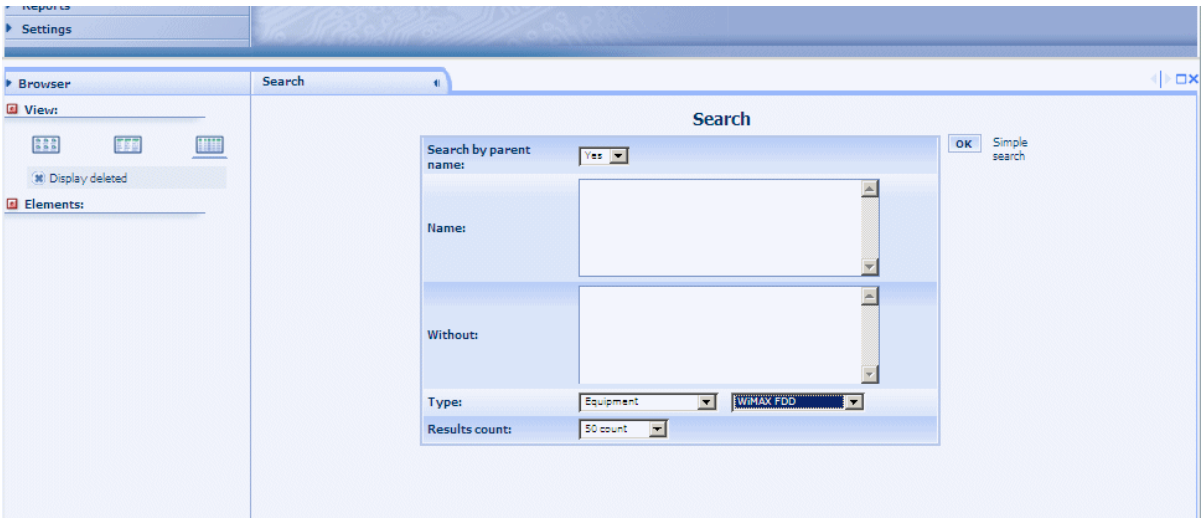


Figure 5-3: Advanced Search

3 Click **OK**; The results are displayed as well as the searching string as it could be given at simple search.

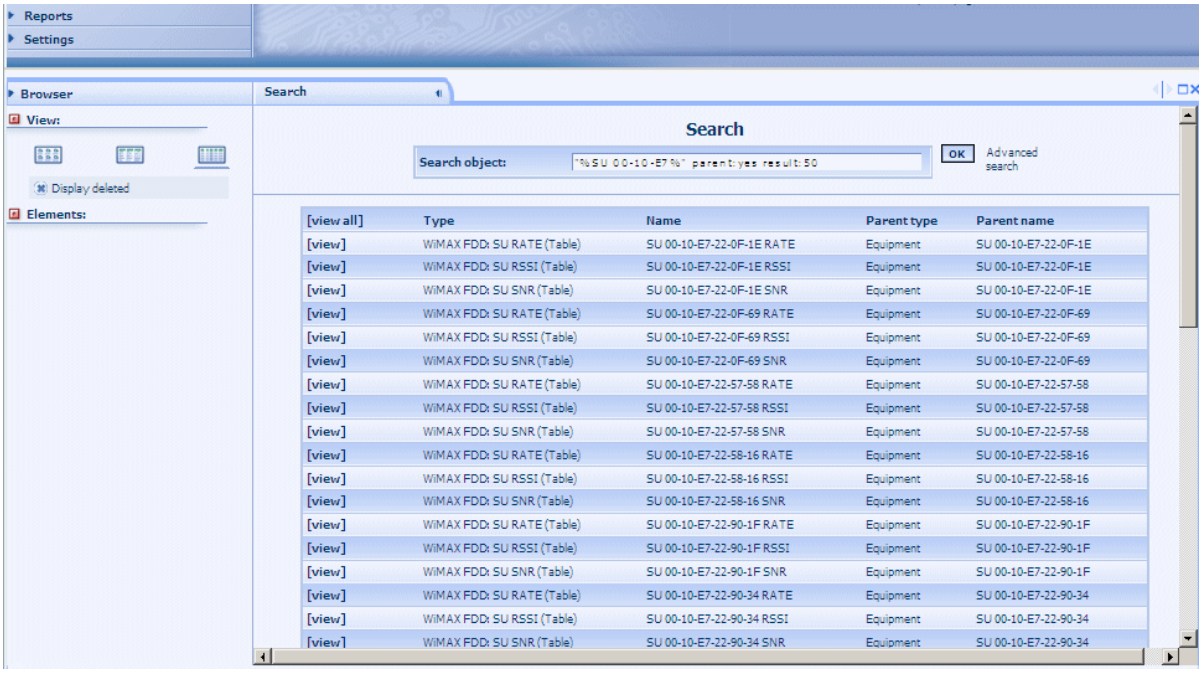

Reports
Settings
Browser
View:
Display deleted
Elements:
Search
Search
Search object:
OK
Advanced search
[view all] Type Name Parent type Parent name
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-0F-1E RATE Equipment SU 00-10-E7-22-0F-1E
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-0F-1E RSSI Equipment SU 00-10-E7-22-0F-1E
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-0F-1E SNR Equipment SU 00-10-E7-22-0F-1E
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-0F-69 RATE Equipment SU 00-10-E7-22-0F-69
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-0F-69 RSSI Equipment SU 00-10-E7-22-0F-69
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-0F-69 SNR Equipment SU 00-10-E7-22-0F-69
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-57-58 RATE Equipment SU 00-10-E7-22-57-58
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-57-58 RSSI Equipment SU 00-10-E7-22-57-58
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-57-58 SNR Equipment SU 00-10-E7-22-57-58
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-58-16 RATE Equipment SU 00-10-E7-22-58-16
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-58-16 RSSI Equipment SU 00-10-E7-22-58-16
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-58-16 SNR Equipment SU 00-10-E7-22-58-16
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-90-1F RATE Equipment SU 00-10-E7-22-90-1F
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-90-1F RSSI Equipment SU 00-10-E7-22-90-1F
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-90-1F SNR Equipment SU 00-10-E7-22-90-1F
[view] WiMAX FDD: SU RATE (Table) SU 00-10-E7-22-90-34 RATE Equipment SU 00-10-E7-22-90-34
[view] WiMAX FDD: SU RSSI (Table) SU 00-10-E7-22-90-34 RSSI Equipment SU 00-10-E7-22-90-34
[view] WiMAX FDD: SU SNR (Table) SU 00-10-E7-22-90-34 SNR Equipment SU 00-10-E7-22-90-34

Figure 5-4: Measurements Search Results

To use the Search results in Measurements:

1. To display the the found objects click **[view]**).
2. If the results contain only measurements or charts, to display them together, click on the [view all] link; A page containing the charts is displayed.
3. To create a virtual equipment containing the displayed list of measurements or charts, click **[Save as Virtual Equipment]**.

NOTE

This method can substitute the manual selection of measurements and charts under the Customization menu item.

5.7 Saving Items as A Submenu

You can create a submenu item under the Measurements menu in order to have a shortcut to a selected item. This may save navigation time and searching for data. This feature is

See also "Customizing Public (Admin only) and Private Menu Items" on page 153

To create a submenu item:

1. Click the equipment icon you want to create a shortcut to.
2. From the Operations drop-down menu select Save As Submenu.
3. Specify if this menu item should appear in Measurement or Alarms or both menus.
4. Click **OK**; the item appears in the Measurements/Alarms menu.

Chapter 6

Setting Alarm Thresholds

In this chapter:

- "Overview" on page 86
- "Creating and Editing Threshold Templates" on page 87
- "Creating Thresholds Based on Templates" on page 99
- "Editing Threshold Types" on page 102

6.1 Overview

Setting alarm thresholds is available for Admin users only.

Thresholds are defined in the StarQuality system in order to trigger alarms when the values exceed the threshold. There are two main threshold types:

- **Normal** - triggers an alarm based on an expression containing one or more measurement values.

- **Grouped** - triggers an alarm depending on normal alarms rather than measurements: it will alarm when there are more alarms than the threshold limit specified in the expression on a normal or virtual site or a given device. The grouped alarms can summarize all possible types of alarms.

The defined thresholds can be complex expressions using different measurements of different devices within different sites. You can also use templates to build thresholds. This manual describes creating normal measurement templates and assigning them to equipments.

The process of adding, viewing and modifying thresholds depends on whether it is initiated from the menu (Settings > Thresholds > Configuration), or from the Equipment Configuration page. The difference between these options is the sets of displayed thresholds and selectable objects, and the displayed measurement names.

This chapter focuses on creating threshold templates and assigning them to equipment.

6.2 Creating and Editing Threshold Templates

Creating thresholds using a template enables the creation of more thresholds, even for the same measurement. First you create the template and then you assign it to a specific equipment. You can also configure the assigned threshold locally.

6.2.1 Creating a New Threshold Template

This section describes how to create a new template (not based on an existing one) and how to configure it.

To create a new threshold template:

1 From Settings select Templates > Threshold Templates; The Threshold Template Configuration list is displayed.

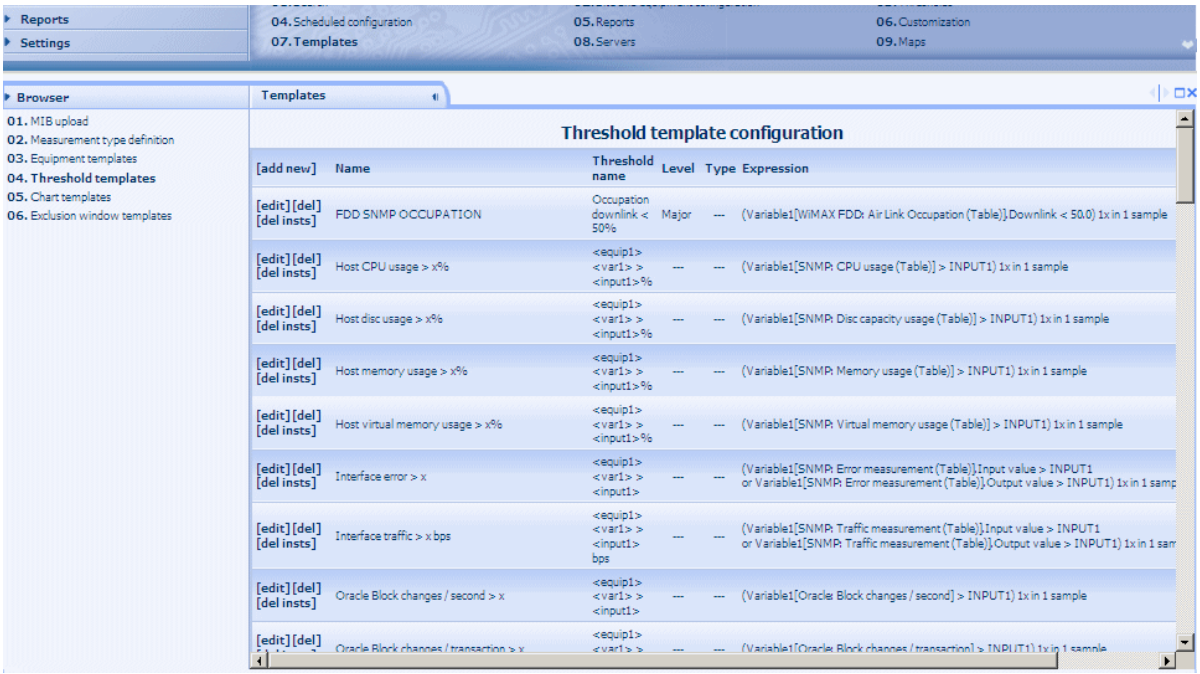


Figure 6-1: Threshold Template Configuration - Template List

2 Click **[add new]**; The Threshold Configuration editor displays an empty template table.

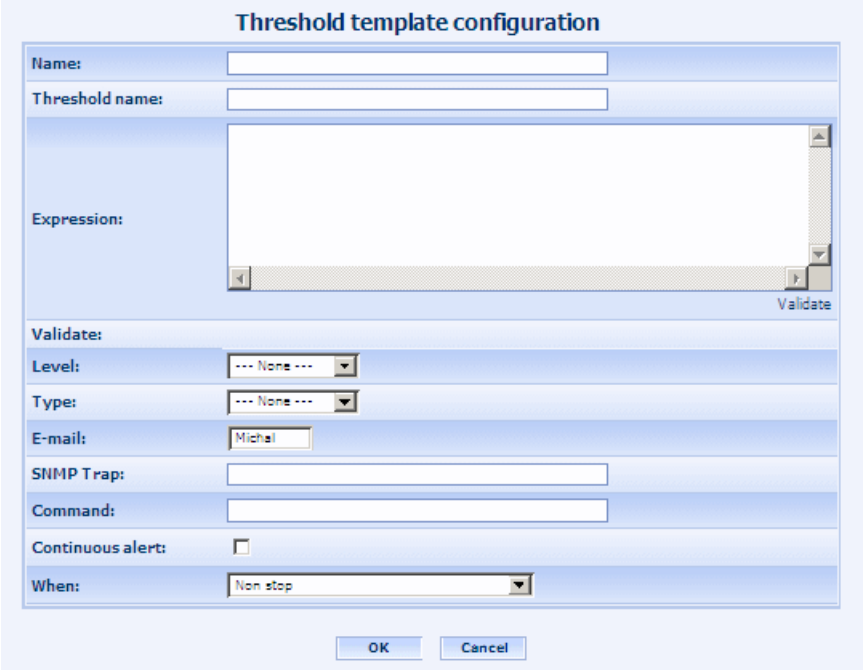


Figure 6-2: Threshold Template Configuration - New

3 Fill in the fields with the following information:

- **Name**: Template name: For example: ”FDD SNMP OCCUPATION too low”
- **Threshold name:** A unique and meaningful name. For example: ”FDD SNMP OCCUPATION < 80%”.
- **Expression:** The threshold format. The application displays the expression in text format, while editing the expression is displayed in its original form in case of normal thresholds, and as different input fields for grouped alarms. See Step 4 below.
- **Level:** The possible threshold values in decreasing severity levels:
  - » Critical (red background)
  - » Major (orange background)
  - » Warning (yellow background)
  - » Minor (cyan background)

- **Type:** the type of the threshold; the list can be modified in the Settings > Thresholds > Types menu (refer to "Editing Threshold Types" on page 102).

- **E-mail:** The e-mail addresses to which the application should send a message if there is threshold violation. Zero or more e-mail addresses can be specified from the list of e-mail addresses provided earlier (refer to "Setting E-mail Addresses (Admin only)" on page 160).

- **SNMP Trap:** E-mail address and port to where the application should send an SNMP trap if there is a threshold violation. Zero or more e-mail addresses can be given, separated by commas. The format of the individual addresses: [community@]computer_name[:port]. If you do not set an explicit community, public is used by default. If you do not set an explicit port, it is 162 by default. The system also sends the variable causing the violation in the SNMP trap, but only if there is only one variable in the threshold definition and its current value can be stored in 32 bits.

- **Command:** Other further command that should be executed in case of a threshold violation. The command is executed by StarQuality from its bin directory. The following parameters are passed to the command via the command line:

  - Threshold ID
  - Threshold name
  - Threshold level: 1=Minor, 2=Warning, 3=Major, 4=Critical, 0=Normal (cleared)
  - Time format YYYY.MM.DD. HH:MM:SS
  - Measurement data (in case of normal threshold): this appears as many times as the number of measurements that took part in the violation (this is missing when the command is executed when the alarm expires).

- Site ID
- Site name
- Equipment ID
- Equipment name
- Measurement type
- Measurement ID
- Measurement name
- IN value (uplink)
- OUT value (downlink)

- **Continuous alert:** If selected, at each violation the appropriate e-mail and/or SNMP trap is sent and/or the appropriate command is executed. If not selected, this will be done only if there was no violation during the previous measurement. In both cases, the system will send an e-mail and/or SNMP trap and/or execute the command when the threshold violation is ended. If the value of the CLEARED_TRAP_COUNT configuration variable is larger than 1, the system sends not only one but the given number of traps when the threshold violation ends.

- **When:** Which time period template is used for the threshold. The possible options are set in Settings > Templates > Exclusion Window Templates.

4 Specify the threshold attributes in the **Expression** section:

The threshold syntax contains 4 parts, separated by a [#] key. That is: <value(VARx)> <comparators (=><)> <reference value> <frequency>. You can also have relations between expressions: Or/ And.

Examples:

- Name: Subscription downlink>100%
  Syntax: #VAR1.O#WMP.IN > 100.0#1#1#

Meaning: Variable value 1.0, WMP (subscription) measurement downlink, should be greater than 100%, at least once per one measurement.

- Syntax: #VAR1.O#WOCC.OUT < 50.0#1#1#
  Validation: (Variable1[WiMAX FDD: Air Link Occupation (Table)].Downlink < 50.0) 1x in 1 sample
- Syntax: #VAR1.O#TOCC.IN < 70.0#2#3#
  and
  #VAR1.O#TOCC.OUT < 50.0#3#3#

  Validation: (Variable1[WiMAX TDD: Air Link Occupation (Table)].Uplink < 70.0) 2x in 3 sample
  and
  (Variable1[WiMAX TDD: Air Link Occupation (Table)].Downlink < 50.0) 3x in 3 sample

Following is a list of syntax elements for thresholds:

- IN - downlink
- OUT - uplink

Table 6-1: Syntax Elements for Thresholds

Description	Parameter		
	FDD 35 (SNMP)	FDD TFTP	TDD
Total Used Capacity Rate 1	WCR1	FCR1	TCR1
Total Used Capacity Rate 2	WCR2	FCR2	N/A
Total Used Capacity Rate 3	WCR3	FCR3	TCR3
Total Used Capacity Rate 4	WCR4	FCR4	TCR4
Total Used Capacity Rate 5	WCR5	FCR5	TCR5
Total Used Capacity Rate 6	WCR6	FCR6	TCR6
Total Used Capacity Rate 7	WCR7	FCR7	TCR7
Total Used Capacity Rate 8	WCR8	FCR8	TCR8
Subscription	WMP	FMP	TMP
Air Link Occupation	WOCC	FOCC	TOCC
CIR Allocated	WPC	FPC	TPC

Table 6-1: Syntax Elements for Thresholds

Description	Parameter		
MIR+CIR Allocated	WPM	FPM	TPM
Throughput	WT	FT	TT
Number Of Connected SUs	WCS	FCS	TCS

Usually only the following part of the Perl syntax is necessary:

- and: and expression
- or: or expression
- +, -, *, /: mathematical operations
- (,): punctuation
- !: logical negation
- <, <=, ==, >=, >: value comparators

Alternatively you can create the template without expression and later edit the threshold locally using input field. See detailed information in “Generating the Expression Using Input Fields ” on page 96.

5 Click **Validate** . If the syntax is red, fix it according to the above.

6 Click **OK**; A new threshold template is added to the system.

6.3 Assigning Threshold Templates to Equipments

To assign a threshold from template to equipment:

1 Access the Site and Equipment Configuration in one of the following methods:

- From Measurements, select the equipment and from the Operations pull-down menu select Go To Configuration.
- From Settings select Site and Equipment Configuration.

2 Scroll down to the Threshold section and click **[From Template]**, or choose New Threshold from Template from the operations drop down menu.

3 Select a template from the list to assign to the threshold and click **OK**; the system displays the threshold template details. You can modify the attributes as required.

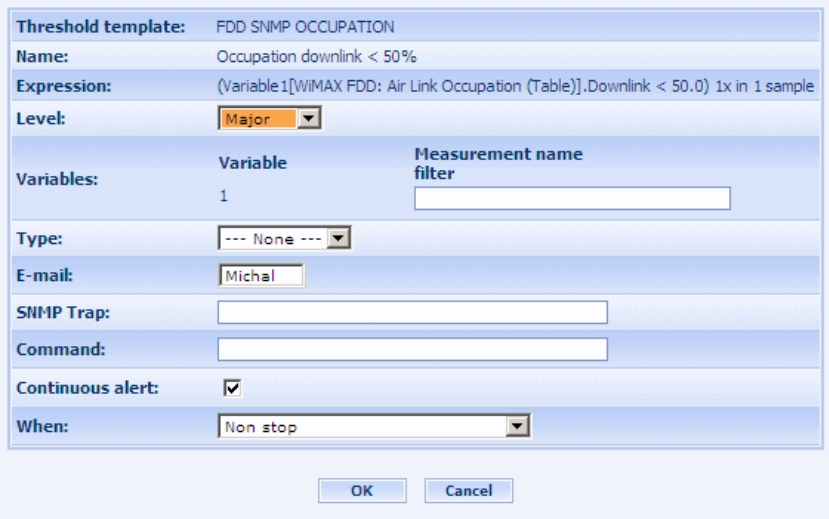


Figure 6-3: Threshold Template Details

4 Click **OK**; The system finds items to which to assign the template.

3 items found
Threshold name
Expression
Occupation downlink < 50% 3 (FDD SNMP.10.0.16.20.Slot 1 Air Link Occupation Downlink < 50.0 1x in 1 sample)
Occupation downlink < 50% 4 (FDD SNMP.10.0.16.20.Slot 2 Air Link Occupation Downlink < 50.0 1x in 1 sample)
Occupation downlink < 50% 5 (FDD SNMP.10.0.16.20.Slot 3 Air Link Occupation Downlink < 50.0 1x in 1 sample)
OK
Cancel

Figure 6-4: Items to assign the threshold

5 Select the AUs to assign the threshold to and click **OK**. The threshold is added to the list of thresholds for the equipment.

6.3.1 Editing an Existing Threshold Template

When you edit an existing template, all the thresholds using it are automatically affected. When you try to edit a template-based threshold, the following message appears:

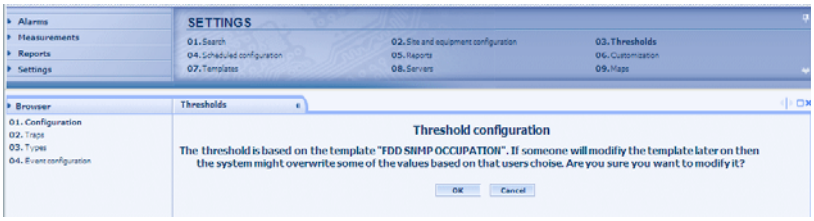

SETTINGS
Threshold configuration
The threshold is based on the template "FDD SNMP OCCUPATION". If someone will modifiy the template later on then the system might overwrite some of the values based on that users choise. Are you sure you want to modify it?

Figure 6-5: Message on Template-based Threshold Modification

To avoid loosing local modifications, you may consider modifying the template and not the threshold itself.

To edit a threshold template:

1 From Settings select Templates > Threshold Templates. The Threshold Template Configuration list is displayed.

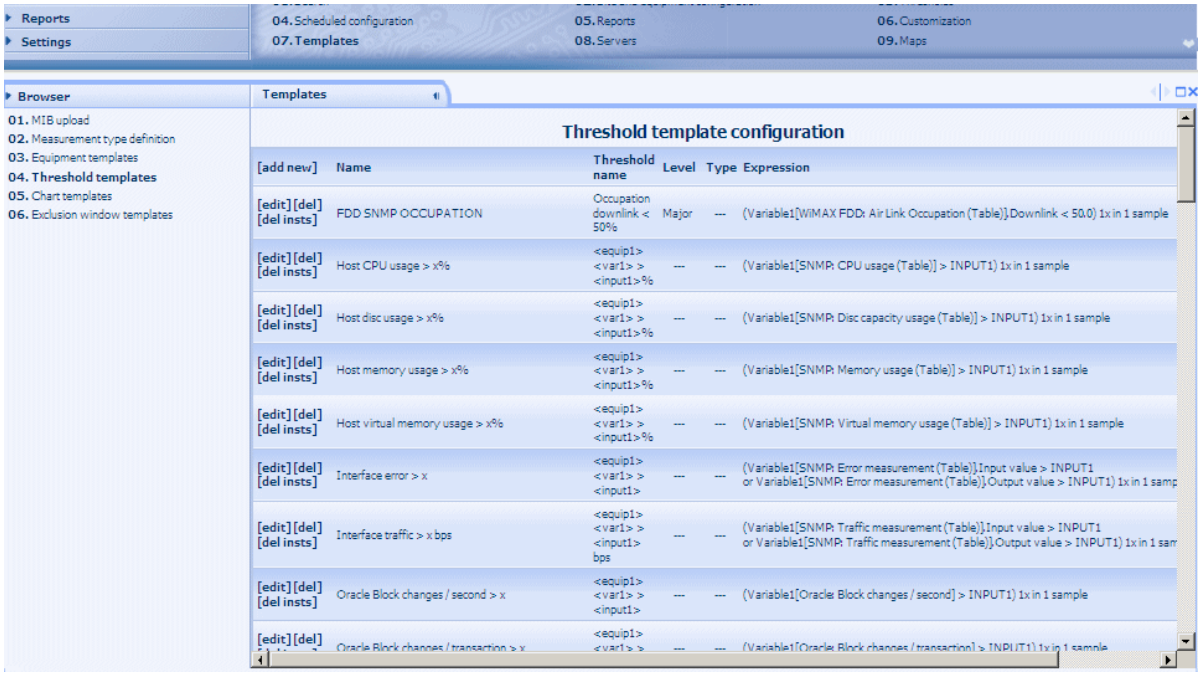


Figure 6-6: Threshold Template Configuration - Template List

2 Click **[edit]** next to the threshold template to be modified. The Threshold Configuration editor displays the attributes (type, e-mail, etc.) stored in the template and the expression defined in the template.

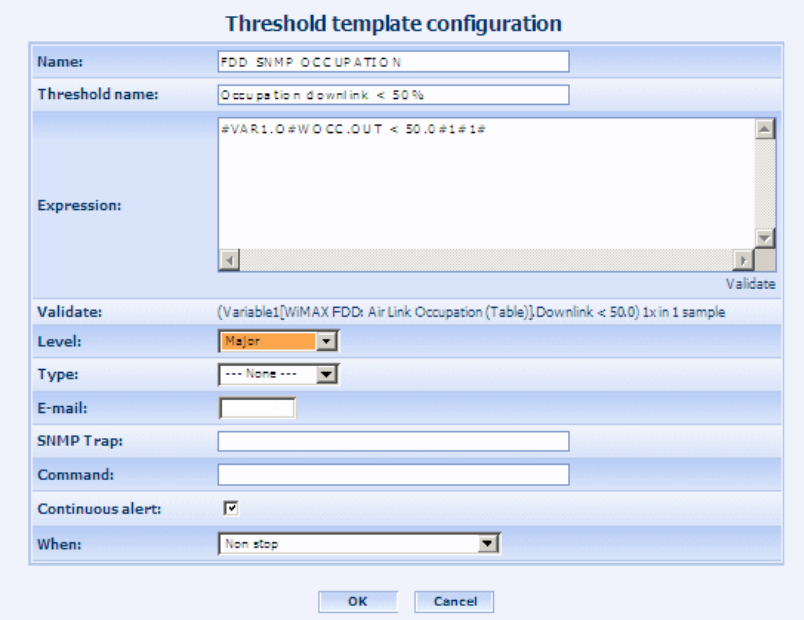


Figure 6-7: Threshold Template Configuration - Editing

3 Specify the threshold attributes (see detailed information in "Creating a New Threshold Template" on page 87).

4 Click **OK** to save your modification to the template.

6.3.2 Generating the Expression Using Input Fields

This section provide basic rules for creating threshold expressions.

You can use the input fields on the Threshold Configuration page for generating the expression elements and selecting the appropriate measurement identifier. This is considered a local threshold modification and not template editing.

To generate a threshold expression:

1 From Settings select Thresholds > Configuration. The list of thresholds is displayed.

2 Click **[edit]** next to the threshold you wand to modify. the Threshold Configuration page is displayed.

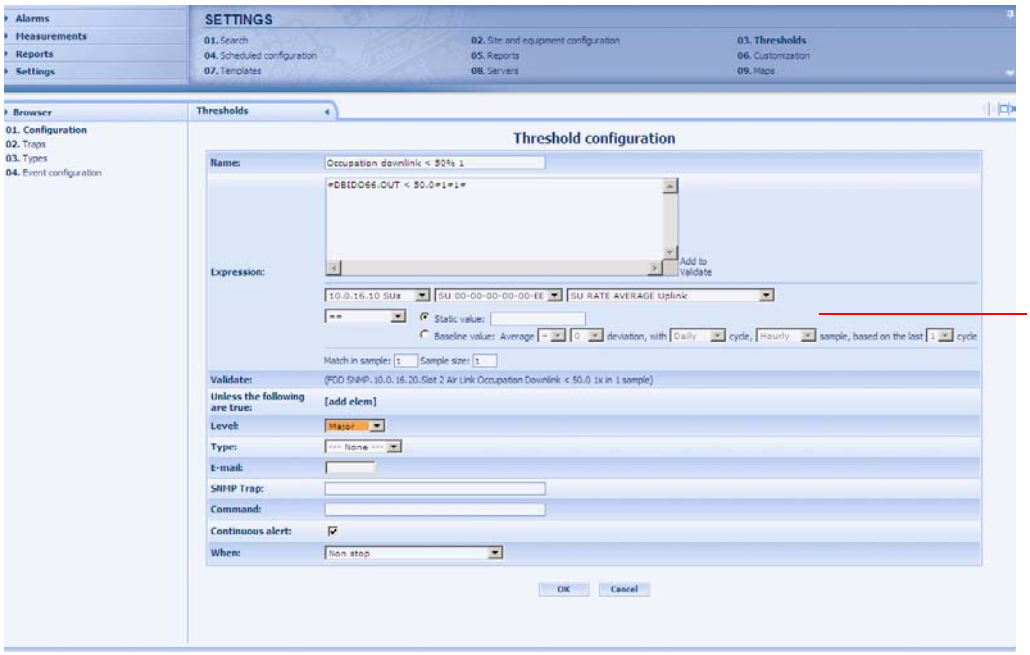


Figure 6-8: Threshold Configuration

3 Fill in or select the following fields as required:

» The site and equipment of the measurement drop-down fields are displayed only when opening the threshold editor from the main page. If you edit the thresholds from the Equipment page, you can choose the measurements belonging only to that specific one.

» The measurement to be selected

» Operator

» Compare value:

◇ **Static value**: interpreted with the same measurement unit as the one displayed on the measurement chart. If there is a single measurement in the sub-expression, the application draws a horizontal line on the measurement chart at the compare value.

◇ **Vaseline value**: the average of the measured values calculated with the specified cycle and resolution + or – a multiple of the standard deviation

- Frequency
- In how many samples
- Based on the last x cycles
- Match in sample
- Sample size

4 Click the **[Add to]** link; The application inserts the required element at the current cursor position in the text, which can be of one of the following two types depending on the values of the fields:

- If the compare value is filled, the application inserts a complete sub-expression element, namely:

  ```
  #selected_measurement_code operator compare_value#frequency#in how many#
  ```

- If the compare value is not filled, the application inserts only the code of the selected measurement.

5 Anytime during the editing process you can click on the **[Validate link]** to check whether the expression has the required syntax. If the syntax is invalid, an error message is displayed, and if it is valid, the user readable format of the expression is displayed in the validate field.

Usually only the following part of the Perl syntax is necessary:

- and: and expression
- or: or expression
- +, -, *, /: mathematical operations
- (,): punctuation
- !: logical negation
- <, <=, ==, >=, >: value comparators

The list of Thresholds syntax elements is in Table 6-1, “Syntax Elements for Thresholds,” on page 91

6.4 Creating Thresholds Based on Templates

When inserting thresholds based on a template, it is not possible to edit the expression manually. Instead, the concrete expression of the threshold to be created can be defined by filling out the fields in the Variables row. The expression may contain several variables, which are named Variable1, Variable2, etc. and are identified with their sequence number in the Variables row. The expression can also contain input values (INPUT1, INPUT2, etc.), which you have to specify before the threshold is created.

Unlike the Equipment and Chart templates, the system remembers if a threshold was created from a template, and also that if during the creation process only the INPUT fields were different. The system uses this information later in different ways:

- In case of modification of these kinds of thresholds, it warns the user that a possible template modification later can overwrite the adjusted values.
- The expression in these thresholds cannot be modified together using the template, but they can be deleted in batch, and in fact when deleting the template the system automatically offers this.

To create a new threshold based on a template:

1. From Settings select Threshold > Threshold Configuration. The threshold list is displayed.
2. Click **[from template]**.
3. Choose a threshold template from the dropdown list. The Threshold Configuration editor displays the attributes (type, e-mail, …) stored in the template and the expression defined in the template.

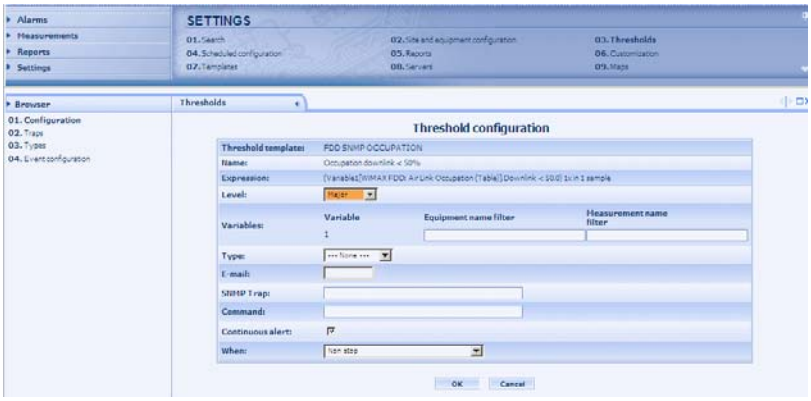


Figure 6-9: Creating a Threshold from Template

The figure above may vary depending on certain fields of the template and the starting page (editing started from the menu or equipment page) as follows:

- If threshold creation was started from the Equipment Configuration, the Equipment name filter does not appear.
- If more variables exist in the expression, they appear in separate rows within the Variables row.
- If one variable has many INPUT fields, the additional input fields appear in the Variables row. However, if no INPUT field belongs to a certain variable, then no input field appears.
- If the threshold level was defined in the template (Critical, Major, ...) or no variable has an INPUT field, then no extra INPUT field is displayed for the individual threshold level, and a threshold level pull-down list is displayed instead

4 Edit the values given in the template. The usage of the input fields in the Variables row depends on whether it is a filter or an INPUT field:

- Filter field: allows you to filter for the name of the equipment and measurement; here the symbols _ and % can be used (see "The Menu System" on page 39). Based on the filter expression the application filters the possible list of measurements and offers thresholds to be created for the results. An important rule is that if a template has more than one variable, the system will show the thresholds only if there is a single variable to which the system finds more than one measurement. For example, in the case above, if the system finds several traffic measurements, and only one round trip time measurement, then it shows

the thresholds to be created. However, if it finds several round trip time measurements too, it prompts the user to further narrow down the number of possible measurements using the filter options.

» INPUT field: according to the measurement unit of the variable, a numerical value or (-1) must be entered here and this value is substituted in the concrete threshold (minus 1 means that the measurement was unsuccessful). If the threshold level is defined in the template, every INPUT value must be filled in for successful creation. However, if the threshold level is not defined there, only those thresholds with all INPUTS given are created. Therefore, for at least one INPUT all values must be defined for successful creation.

5 Click **OK** to view the list of thresholds to be created.

6 Before the actual creation you can modify this list by selecting the ones that should be created and unselecting the others.

7 Click **OK**; The system creates the selected thresholds.

6.5 Editing Threshold Types

Each threshold may belong to a type which does not need to be specified. Therefore, when a type is deleted, the thresholds belonging to that type will not be deleted but become typeless. The types have a single name parameter. Configuring a type is done separately in the system in order to allow selection of the type values from a drop-down menu when configuring or displaying the thresholds.

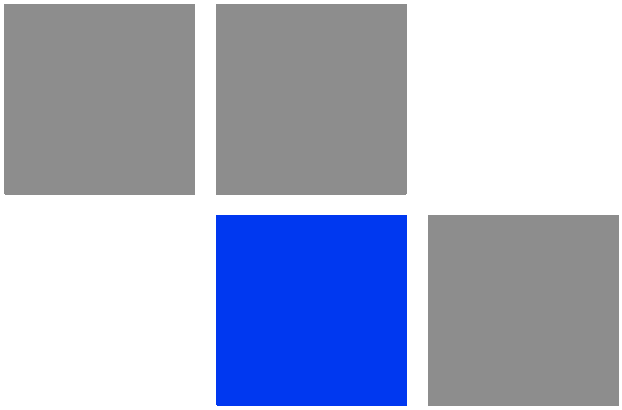
A restricted administrator cannot edit a type if it is used by a threshold template or by a threshold for which the user does not have right.

To edit a threshold type:

1 From Settings > Thresholds select Types; The Threshold Type Configuration page is displayed.

2 Do one of the following:

- To add a new type, click **[add new]**
- To delete a type, click **[del]**
- To change the type name, click **[edit]** next to the threshold type and modify the name



Chapter 7

Threshold-Crossing Alarms Monitoring

In this chapter:

- "Overview" on page 105
- "Navigating, Viewing and Filtering Alarms" on page 107
- "Downloading Data to Excel Files" on page 112

7.1 Overview

Viewing Alarms is performed similarly to viewing measurements: a configurable quick menu at the top panel is used for displaying and navigation, and also new elements can be added to it using the Settings > Customization menu.

The alarms are displayed on the most prominent parts of the user interface to provide quick accessibility. The color-coded summary of the currently active alarms are displayed at the top-right corner of the window. The alarms can be navigated by selecting the Alarms item on the main menu.

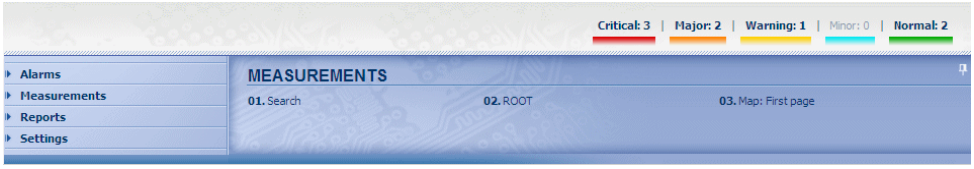


Figure 7-1: Alarms Summary at the Top Right Corner of the Window

By default, only the “Root” highest level group is listed.

The list view of alarms is displayed in the following figure:

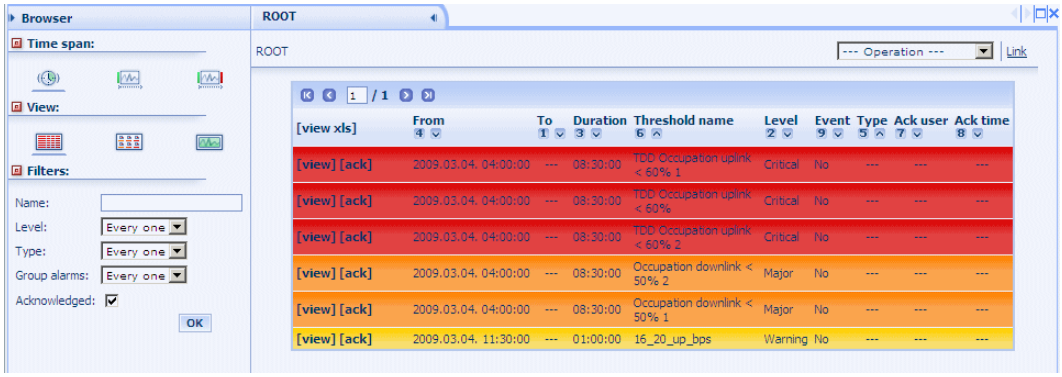

Browser
Time span:
View:
Filters:
Name:
Level: Every one
Type: Every one
Group alarms: Every one
Acknowledged:
OK
ROOT
ROOT
--- Operation ---
Link
1 / 1
[view xls] From To Duration Threshold name Level Event Type Ack user Ack time
[view] [ack] 2009.03.04. 04:00:00 --- 08:30:00 TDD Occupation uplink < 60% 1 Critical No
[view] [ack] 2009.03.04. 04:00:00 --- 08:30:00 TDD Occupation uplink < 60% Critical No
[view] [ack] 2009.03.04. 04:00:00 --- 08:30:00 TDD Occupation uplink < 60% 2 Critical No
[view] [ack] 2009.03.04. 04:00:00 --- 08:30:00 Occupation downlink < 50% 2 Major No
[view] [ack] 2009.03.04. 04:00:00 --- 08:30:00 Occupation downlink < 50% 1 Major No
[view] [ack] 2009.03.04. 11:30:00 --- 01:00:00 16_20_up_bps Warning No

Figure 7-2: Table View of Alarms

To use the Alarms list:

Use the following operations in the alarms list:

Table 7-1: Using the Alarms List

To	Do this	Comments
Move to next page/entries on the list	Use the arrows (< >) at the top of the list	
Sort the list by column entries	Click on the column header	
Sort in ascending/descending order	Click the up/down arrows under the column header	The numbers indicate the order
Download the table	Click the **[view xls]** link	
Obtain detailed information of an entry	Click the **[view]** link	the corresponding measurement values are displayed in a chart.
Acknowledge an alarm	Click the **[ack]** link	if the alarm has already been acknowledged, the time and name of the user that acknowledged are displayed in the table.
Delete (close) an alarm	Click the **[ack]** link (if available)	If the alarm is not a threshold violation but is from an event definition, and the event has not yet been closed, a [del] link appears.

Deleting an alarm is necessary, for example, if there is no closing event in the definition or a trap has been lost, or if the alarm is not relevant anymore. In this case, if the alarm has not been acknowledged yet, then it becomes acknowledged as well.

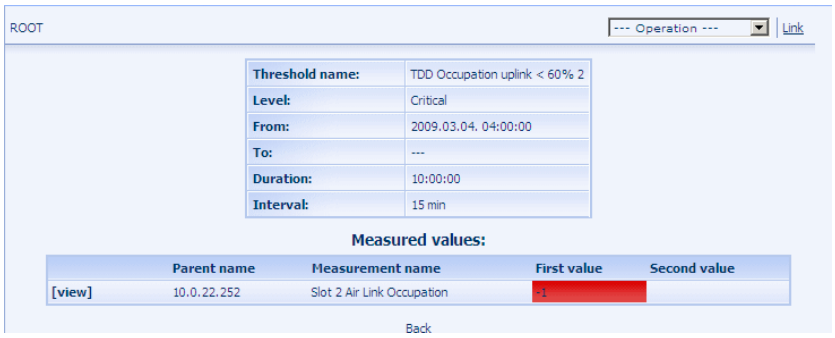


Figure 7-3: Detailed Alarm Information

7.2 Navigating, Viewing and Filtering Alarms

The browser**,** at the left-hand side of the user interface under the main menu, is used to filter and arrange the alarms. There are three *groups* in the Browser, each controls the display of alarms. The individual groups can be expanded or collapsed and by clicking on the button on the left edge next to them, which can be useful since this panel has no scroll bar. A *tooltip* is also displayed if the mouse pointer is moved above the group icon.

Filtering of alarms can only be set with these groups if a set of alarms is already selected on the top part of the screen.

The following sections explain in details the individual groups.

7.2.1 Viewing Alarms by Time Span

You can define the time span of alarms to be displayed. The following view options are available in this group:

Table 7-2: Time Span Options

Icon	Tooltip	Description
	Realtime view	The currently active alarms are displayed
	Historical view by date	A calendar is displayed. Select the desired day, week, month, and year to dispaly alarms during that time
	Historical view by time	Specify the time interval (hours, seconds, etc.)

7.2.2 Alarm View Options

The way the alarms are displayed can be changed using the second group of controls.

7.2.2.1 Main View Options

The following view options are available in this group:

Table 7-3: Alarms View Options

Icon	Tooltip	Description
	Table view	The alarms are displayed in a list table. This is the default view. Refer to “Overview” on page 105, and Figure 7-2.
	Object view	The current site hierarchy is displayed with icons instead of the table of alarms. The color of icon indicates the most severe alarm existing for this item. See detailed description of this view below (“Object View Options” on page 108).
	Chart view	The number of active alarms are displayed in a graphical form (see “Filtering Alarms” on page 111).

7.2.2.2 Object View Options

By selecting the “Object view” icon, the current site/virtual site hierarchy is displayed with icons instead of the table of alarms. Only those sites for which there is an active alarm are visible. The icons are colored by the color code of the most severe alarm of the contained equipment: for example, if under a site there is an equipment with am active “Critical” alarm, the color of the site’s icon is red; if the most severe active alarm of the equipment under the given site is “Major”, then its color is orange, and so forth.

During navigation the navigation path is displayed in the top line above the middle viewing area (under the name of the tab), which can be used to quickly navigate up to higher levels by clicking on its segments.

In the “Object view”, three further icons are available, which are used to further simplify the object view:

- **Icon view**: The sites containing alarms are displayed with large, easy-to-see icons, up to five in a row.

Figure 7-4: Icon View of Alarms

- **List view:** The sites containing alarms are displayed with smaller icons (up to five in a row) allowing more icons to be displayed on a single screen. Icons with alarms can easily be identified based and their color codes.

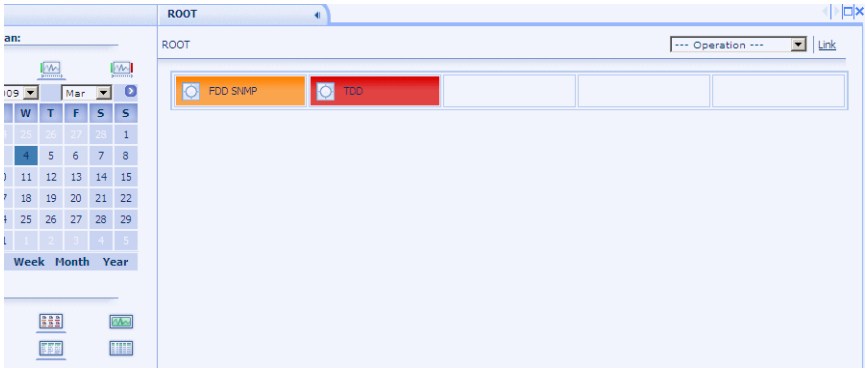


Figure 7-5: List View of Alarms

- **Detailed view:** The site/equipment icons are listed one under another (still colored) together with their names and descriptions

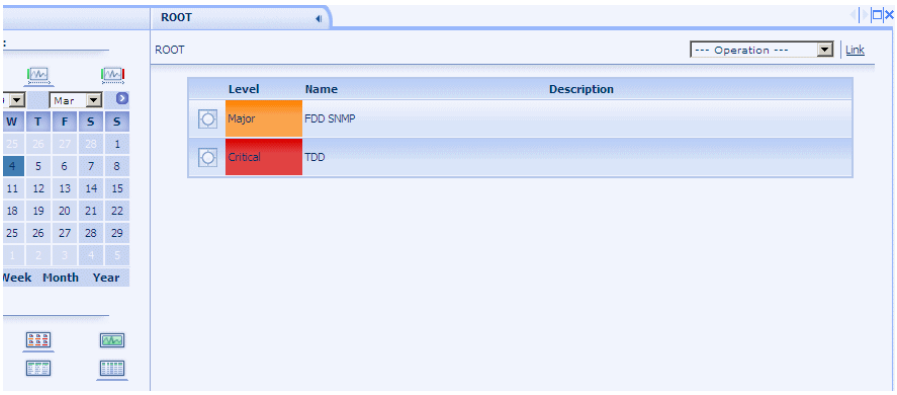


Figure 7-6: Detailed View of Alarms

In each of these views, you can navigate to a site by clicking on its icon, in which case the contained sites and equipment are displayed in a similar view. Tracking the hierarchy downwards you can reach the equipment causing the alarm, and then by clicking on the icon of this equipment the name of the violated threshold and the chart of the referenced measurement values are displayed. On this lowest level you can also choose a threshold that is currently not violated in order to check the settings of the threshold value.

If the alarm is not threshold but event based, then the StarQuality displays the time of alarm on the chart with superimposed transparent red rectangles.

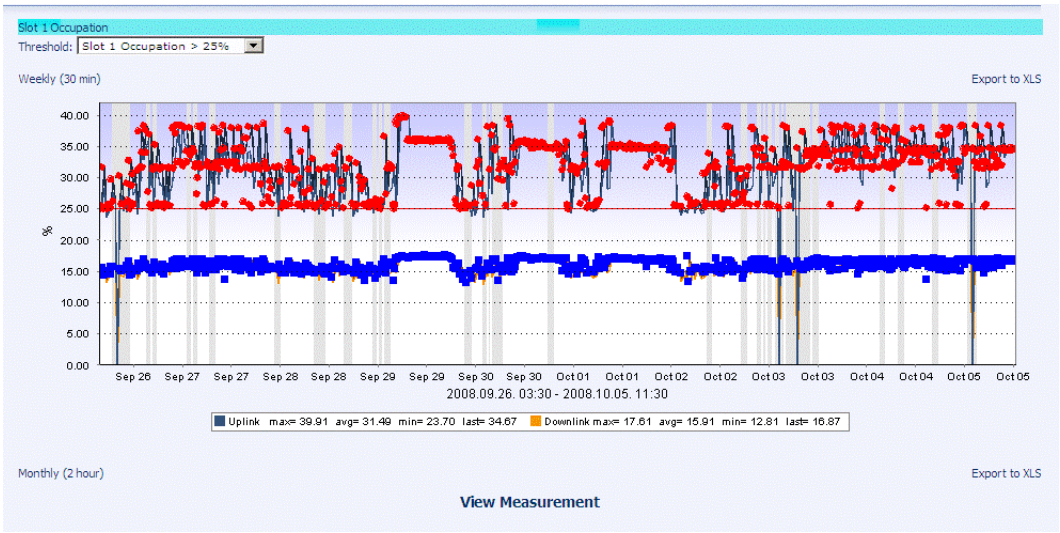


Figure 7-7: The Equipment Level View of Alarms

7.2.3 Filtering Alarms

In the alarms browser, the third group “Filters” allows the specification of filter-conditions of alarms. Filtering is available using the following types:

Table 7-4: Filtering Types

Type	Description
Name	The name of the threshold (which typically contains the name of the corresponding equipment, such as “E1909 low availability”). The usual % and _ characters can be used here. Most useful in the List view.
Level	A dropdown list, used to filter on the severity level: Critical, Major, Warning, Minor).
Type	A dropdown list, used to filter on the threshold type.
Grouped	A dropdown list, used to set whether the normal and/or the grouped alarms should be displayed.
Acknowledged	Display acknowledged alarms - Yes/No

7.3 Downloading Data to Excel Files

You can download the displayed data in XLS format. The generated XLS file containing the measurement data also includes the name of the threshold, and the background color of the data cells that violate the threshold matches the color code of its severity level. If threshold violation occurred, but that value was not taken into account in the current alarm, then the background color of the cell is set to cyan.

If a public or private (as opposed to normal) chart is exported to an XLS file, the generated file differs in the following aspects:

- The number of columns and their names are the same as in the chart definition
- Regardless of the chart definition the values are not aggregated
- The resolution of rows follows the smallest time interval of the measurement data, thus infrequent measurement data are stored sparsely in the table

To save data to Excel:

- To save the alarms table click **[view xls]**; open or save the file.

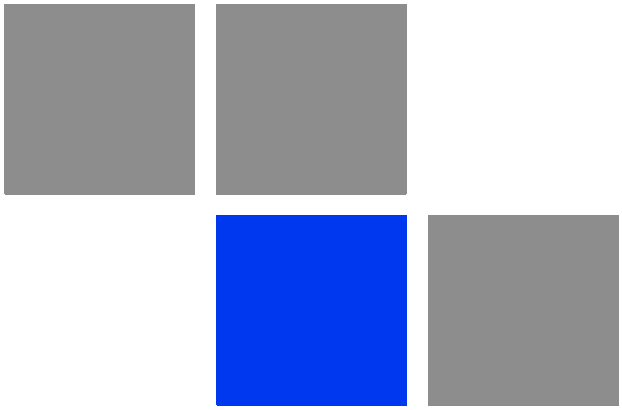
	A	B	C	D	E	F	G
1	**Created by:**	**Administrator**		**When:**	**2009.03.04. 14:31:45**		
2	**From date:**	**2009.03.04. 14:31:31**		**To date:**	**2009.03.04. 14:31:31**		
3							
4	**From date**	**To date**	**Duration**	**Threshold name**	**Level**	**Ack user**	**Ack time**
5	2009.03.04. 04:00:00		10:15:00	Occupation downlink < 50% 1	Major		
6	2009.03.04. 04:00:00		10:15:00	Occupation downlink < 50% 2	Major		
7	2009.03.04. 11:30:00		02:45:00	16_20_up_bps	Warning		
8							
9							

Figure 7-8: Sample XLS of Alarm Table

- To save the chart data, click **[Export to XLS]** above the chart. The first few lines of a sample exported XLS file are:

	A	B	C	D	E	F	G
1	**Parent name:**	10.0.16.20		**Parent description:**			
2	**Measurement typ**	Air Link Occupation		**Measurement na**	Slot 1 Air Link Occupation		
3	**From date:**	2009.03.04. 11:45		**To date:**	2009.03.04. 12:45		
4	**Created by:**	Administrator		**When:**	2009.03.04. 14:07:29		
5	**Unit:**	%		**Remark:**			
6	**Interval:**	15 min		**Threshold name**	Occupation downlink - Level		Major
7							
8	**Time**	**First value**	**Second value**				
9	2009.03.04. 11:45:00	39.7	17.8				
10	2009.03.04. 12:00:00	39.7	24.6				
11	2009.03.04. 12:15:00	39.4	45.6				
12	2009.03.04. 12:30:00	38.6	50.2				
13	2009.03.04. 12:45:00	38.6	50.1				
14							

Figure 7-9: Sample XLS File of Chart Data



Chapter 8

Reports

In this chapter:

- "Overview" on page 116
- "Report Configuration (Admin Only)" on page 117
- "Viewing Reports" on page 126

8.1 Overview

Reports are variable evaluations on a set of sampled objects (AUs, SUs, measurements) in the system. The administrators can configure the selected subset, the variables and even the reports themselves dynamically, that is, the system contains no basic report. Each report may be one of the following types:

- Table - displays all findings depending on predefined table size
- TopN - displays only the top N findings
- Chart (Not Applicable)

With the exception of a few minor details the first two types are virtually the same: tables containing report variables and objects (sites, equipments and measurements).

This section describes creation and use of table/TopN reports, in which the variables are the measurement and calculations performed and saved by the StarQuality system.

8.2 Report Configuration (Admin Only)

The configuration of reports (Settings > Reports), is available to admin users only, and consists of the following steps:

- Defining the variables which will be the building blocks of the reports. Only measurements performed after defining them as variables will be available for the reports. Refer to "Defining Report Variables" on page 117.
- Sorting the created variables in various combinations into report views. Refer to "Report Views Configuration" on page 120.
- Optional: Setting the automatic report sending. This step, unlike the above, can be performed by any user and not only the admins. You can set for each scheduled report the recipient e-mail address, the interval and format of the report and for which object the report should be generated. Refer to "Scheduled Reports Configuration" on page 125.

8.2.1 Defining Report Variables

Reports are based on the system existing measurements.

To start defining report variables:

1. From the Settings menu select Reports; The Reports tab is displayed (empty in new systems).
2. In the Browser click **Report Variables**; The Report Variable Configuration starting page contains a table showing the active (currently monitored) and inactive report variables. In a new system, the table is also empty.

Alarms
Measurements
Reports
Settings
SETTINGS
01. Search
02. Site and equipment configuration
03. Thresholds
04. Scheduled configuration
05. Reports
06. Customization
07. Templates
08. Servers
09. Maps
Browser
01. Report variables
02. Report views
03. Scheduled reports
Reports
Report variable configuration
[add new] Variable name Measurement name Additional query Detailed summary at equipment level Interval When Active
[edit] FDD SNMP Occupation Air Link Occupation --- No 900 Non stop Yes
[edit] FDD SNMP Throughput Throughput --- No 900 Non stop Yes
[edit] TDD Occupation Air Link Occupation --- Yes 900 Non stop Yes
[edit] TDD Throughput Throughput --- No 900 Non stop Yes
[edit] Total Tp Throughput --- Yes 900 Non stop Yes

Figure 8-1: Report Variables Window (Example)

The meanings of the individual columns of the table are:

Table 8-1: Report Variables Information

Item	Description
Links	■ **[add new]** ■ **[edit]**
Variable name	A unique and meaningful identification of the report variable, per equipment type. When defining the report view, these names are selected.
Measurement name	A selected item from a predefined list of measurement names. The name does not give any indication as to the equipment type. The value of this field is determined during creation and cannot be modified later.
Additional query	An option to limit the evaluation of a variable. Not applicable.
Detailed summary at equipment level	Not applicable. Leave it as “Yes”
Interval	Variable collection interval. Always 900 sec in WiMAX
When	The When value defines when to summarize the variable at site and equipment levels. The statistics on the site and on the equipment level are calculated based on this time period. Leave as “non stop”.
Active	Activating or deactivating the evaluation of the report variable. The only way to cancel the calculation of an existing variable.

To create a report variable:

1 Click **[add new]**; the following window is displayed:

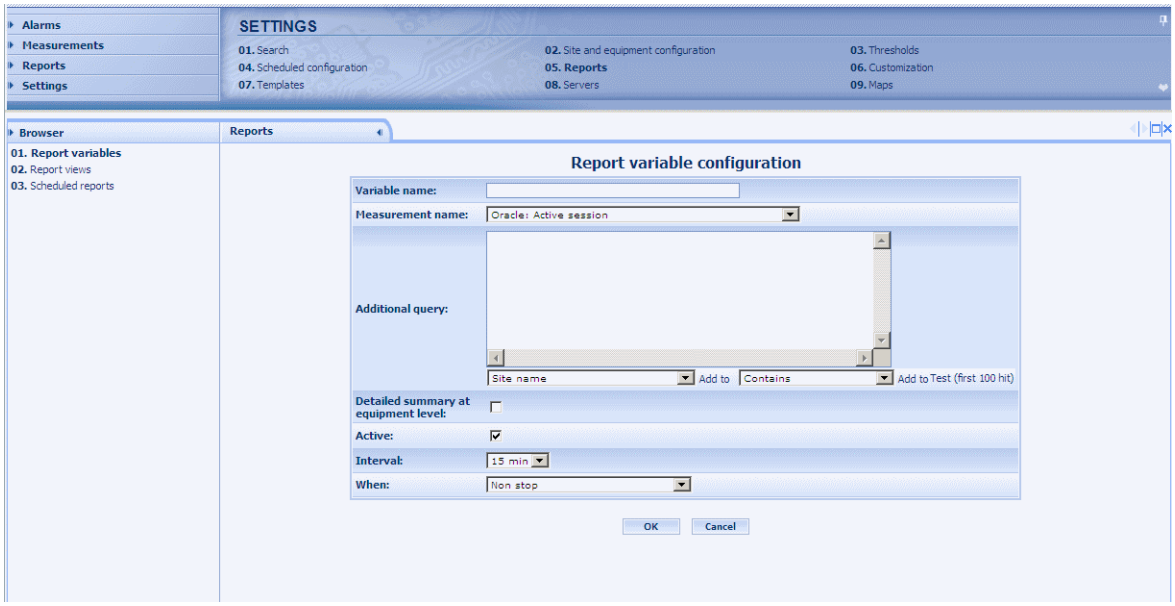


Figure 8-2: Adding a New Report Variable

2 Enter a unique and meaningful name for the variable. The name should reflect the device type as well as the measurement. For example: “TDD Occupation”.

3 Select a Measurement Name from the drop-down list. The list is based on measurements per collector/equipment type. Make sure to select the measurement from the correct collector.

4 Leave Detailed summary at equipment level unchecked.

5 Verify that the Active checkbox is selected.

6 Leave the interval of 15min.

7 Leave the When value as ”non stop”

8 Click **OK**; the reporrt variable is added to the list.

To edit an existing report variable:

1 Click **[edit]** next to the variable to be changed; the following window is displayed:

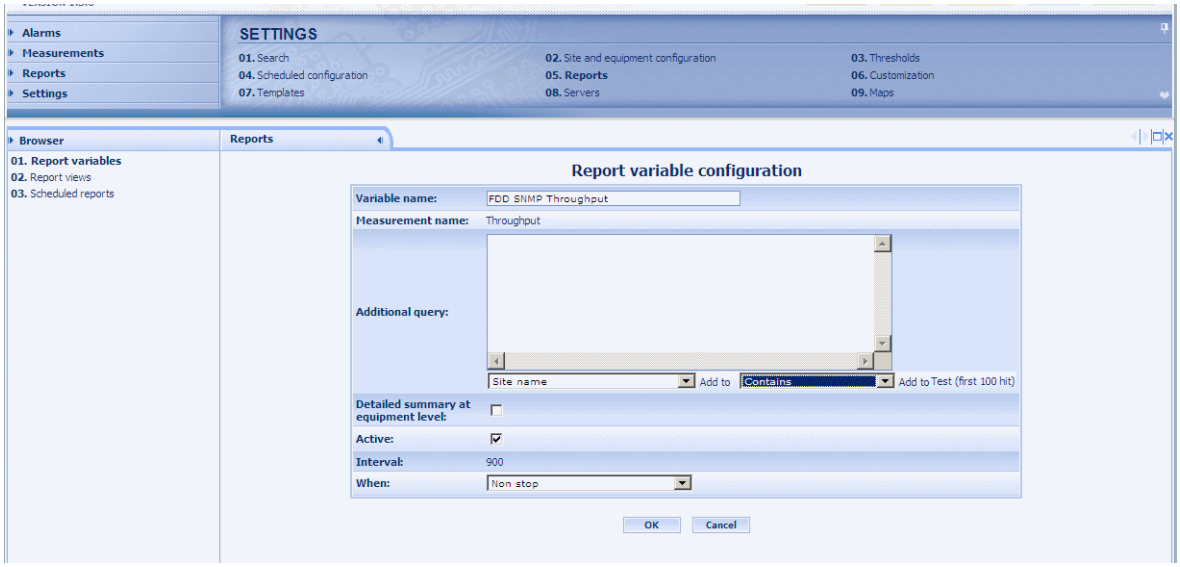


Figure 8-3: Editing a Report Variable

2 Edit the variable name as required.

3 Select if to activate/deactivate the variable calculation using the Active check-box.

4 Click **OK**; the report variable is updated in the list.

NOTE

An active report variable consumes computer resources. Therefore, it is recommended to define only the required variables and deactivate redundant ones.

8.2.2 Report Views Configuration

Report view is the display method of the report variables.

Report views have three types: Table, TopN and Chart (not applicable). The first two are table-arranged report variables; The difference between TopN and Table reports is that for TopN reports it is impossible to navigate among the sites.

To Start Report View Configuration:

1 From the Settings menu select Reports; The Reports tab is displayed (empty in a new system).

2 In the Browser click **Report Views**; The Report View Configuration starting page contains a table showing the active report views. On a new system, this table is also empty.

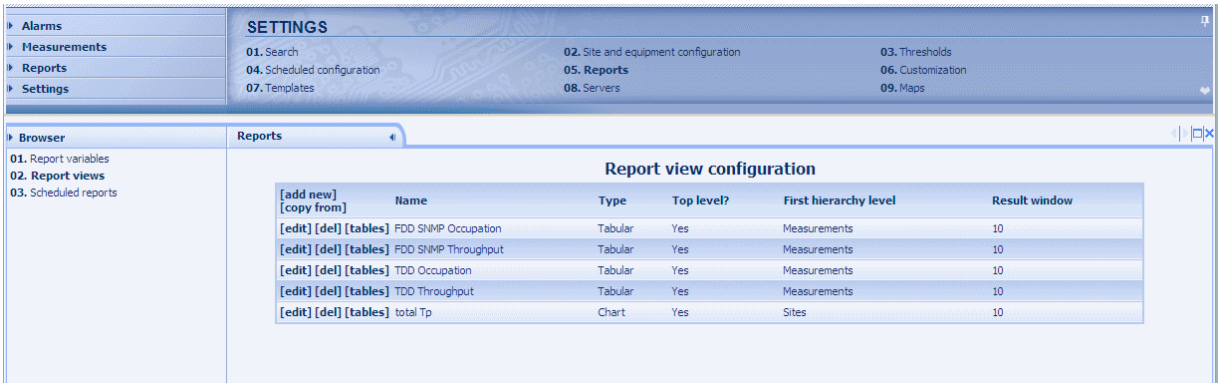


Figure 8-4: Report View Configuration Window (example)

The meanings of the individual columns of the table are:

Table 8-2: Report Views Information

Item	Description
Links	**[Add New]/ [Copy From]** - used to create new report views **[Edit]** - used for modifying general attributes of an existing report view **[Del]** - deleting a report view **[tables]** - used for configuration of an existing report view
Name	The name of the report view. It appears on the top of the report page, in the Excel exports.
Type	Tabular, TopN or Chart type
Top level?	Yes/No.

Table 8-2: Report Views Information (Continued)

Item	Description
First hierarchy level	The reports allow hierarchical navigation along with movements among each other or in time, so navigation is possible among sites, equipments and measurements. This setting determines the starting navigation level: ■ Sites: Not applicable ■ Equipments: Not applicable ■ Measurements: Navigation always searches for all measurements under the current (for top level report it is the root) site and displays them. Not applicable for Chart reports. ■ Threshold: Not applicable.
Results Window	Each report may contain several pages, and each page may contain the maximum number of objects specified here.

8.2.2.1 Creating Report Views

To create a new report view:

1. Click **[add new]**; a setting page is displayed (see Figure 8-5).
2. Enter a meaningful name (free text).
3. Select a type: Tabular or TopN.
4. Leave the Top Level? checkbox selected.
5. Set the First Hierarchy Level to: measurements.
6. Set the result window size as desired.
7. Click **OK**; The new view is added to the list of views.

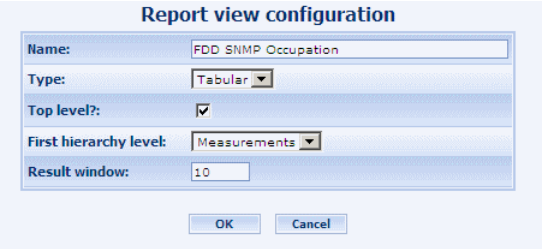


Figure 8-5: Creating a New Report View

8 In the Report View Configuration window (see Figure 8-4) click on the **[tables]** link. The configuration page is displayed (empty in a new report):

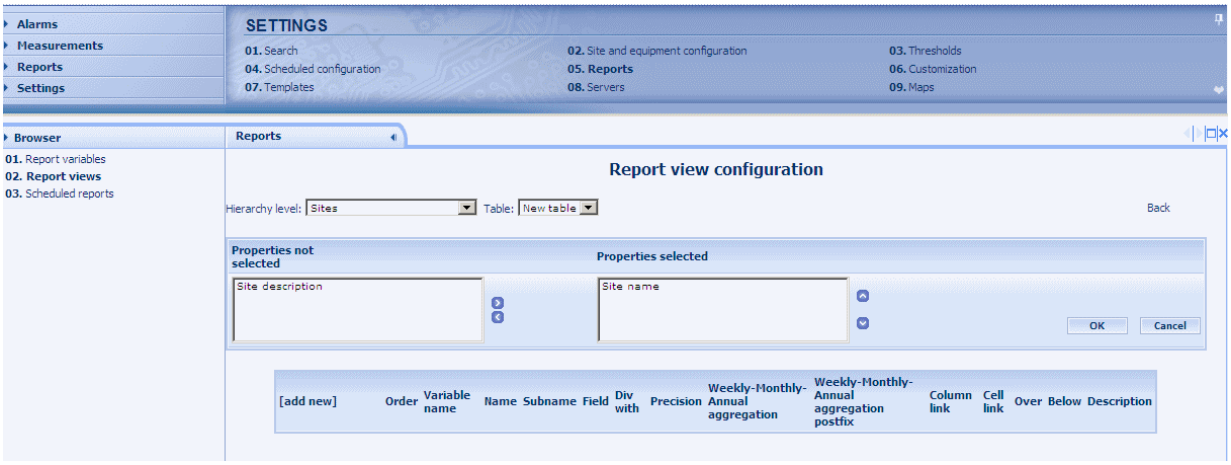


Figure 8-6: Configuration Page

9 In the upper section, select the hierarchy level: Additional Measurements.

10 Click **[add new]** to add variables to the report view. Add as many variables as necessary. The following window is displayed per each variable:

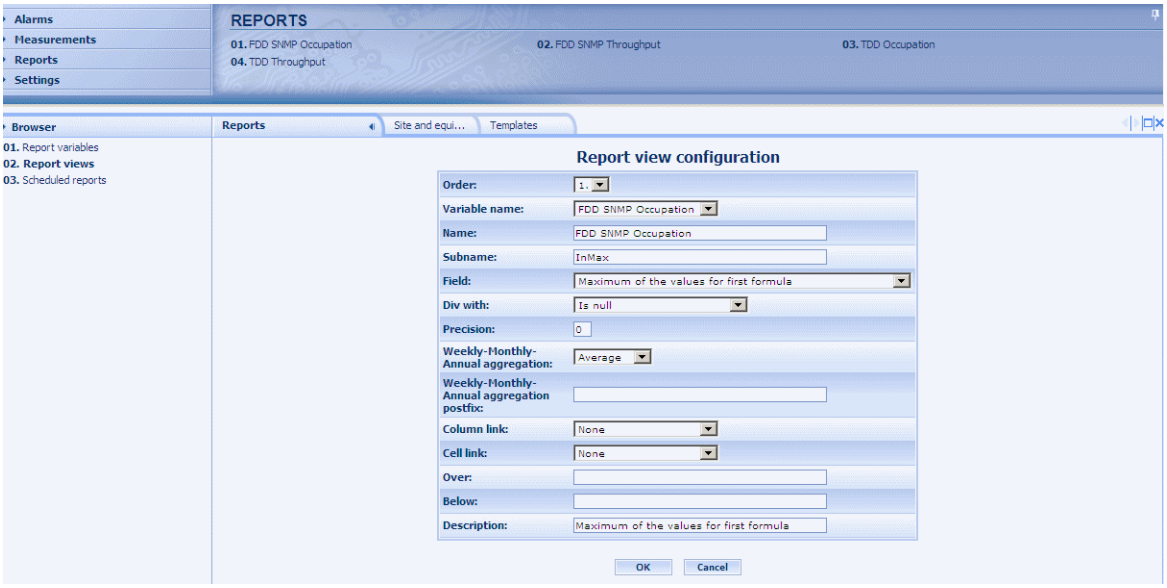


Figure 8-7: Adding a New Variable

11 Repeat for each variable:

a Set the order. Assign the same order to variables you want to group. Grouped variables share variable-.name and name; they differ buy subname.

b Select a variable name from the drop-down list of your pre-defined variables (See “To create a report variable:” on page 119.)

c Enter a meaningful name for the order group.

NOTE

In cases it is applicable, the name should specify if the measurement is an uplink or downlink value.

d Enter a meaningful subname for the subcolumn; it is only visible on the report, if there are at least two grouped columns.

Example of grouping according to steps a - d:

- Common Measurement name: Occupation
- Common Name: Occupation Downlink
- Subname: Min. for one variable, Max. for the other

e From the Field drop-down list select the required field value. Make sure that the field matches the names given above.

NOTE

In applicable cases, ‘First formula’ always represents downlink; ‘Second formula’ represents uplink.

f Leave Div with ‘is null’.

g Leave the Precision value at 0.

h Set Weekly-monthly aggregation according to the value selected in the Field.

i Enter the Weekly-monthly-yearly summary postfix: The application appends this text to the name of the column if the field is specified and it is not a daily report.

j Leave all the next fields unedited.

k Click **OK**. The Report View Configuration page is displayed.

12 In the upper right side of the page, select the report order using the Order by Column dropdown list.

13 Click **Back** in the upper right corner to save changes and return to the report view list.

To edit an existing report view:

1 From Settings select Reports > Report Views.

2 Click **[tables]** next to the report view you want to edit.

3 In the upper section, select the hierarchy level: Additional Measurements.

4 Click **[add new]**, **[edit]** or **[delete]**.

To create a new report view based on an existing view:

1 Click **[copy from]**; a setting page is displayed. (see Figure 8-8).

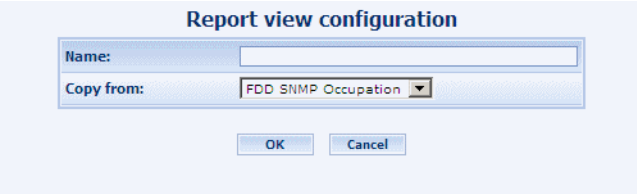


Figure 8-8: Creating a New Report View Using the Copy From Option

2 Enter a new name for the report view.

3 Select the report name to base the new report view from the dropdown list.

4 Click **OK**.

5 Edit the new report as described above.

8.2.3 Scheduled Reports Configuration

Not Applicable

8.3 Viewing Reports

The reports are displayed in the Reports viewing menu about an hour after defining the variables.

To view a results report:

1 From the Main menu > Reports; The report names appear as menu items at the top menu.

2 Click a report name to display it in the working area.

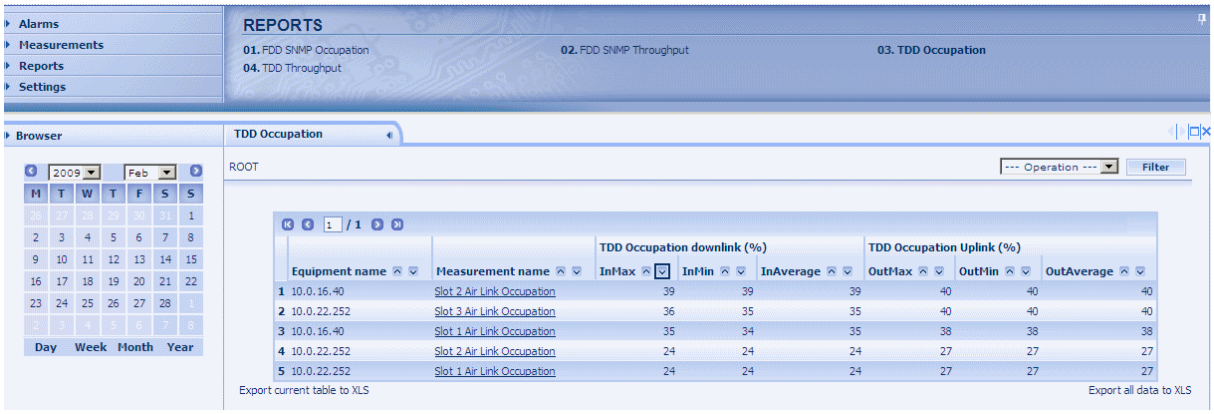


Figure 8-9: Reports Window

The reports contain tables that display the properties of the objects and the values of variables that were configured by the administrators.

8.3.1 Navigating Report Views

Use the following buttons:

Table 8-3: Navigating Reports

Button/Link	Description
	Go to the first and previous page, respectively
	Go to the next and last page, respectively

Table 8-3: Navigating Reports (Continued)

Button/Link	Description
	Page x out of total number of pages. Jump directly to the required page by entering its number in the text field and pressing the enter key.
	Up and down arrows for ordering all results on the given level. The current ordering is indicated by a blue rectangle around the selected arrow
Export current table to XLS	Exports the currently displayed entries to an XLS file.
Export all data to XLS	Exports the all the entries to an XLS file, including entries which are not currently displayed.
Filter	Filters entries by equipment name or measurement name. The rules for special characters are the same as for search (see "Search (Admin only)" on page 134)
	Entries with underline, serve as links, and jump to the specific equipment measurement, with the properly selected date and time interval.

8.3.2 Setting the Report Range

While viewing the report results, the calendar at the Browser is used for setting the time interval of the report. The selected report view is displayed to the right of the calendar.

To use the calendar:

1. Click on the arrow buttons in the two top corners of the calendar to change the month. Alternatively, select a month and year using the drop-down menus (see Figure 8-10).
2. To change the type of time interval, click on the Day/Week/Month/Year text links at the bottom.
3. Select the actual time interval by clicking on one of the displayed days, months or years.

NOTE

Time intervals starting in the future cannot be selected with the calendar.

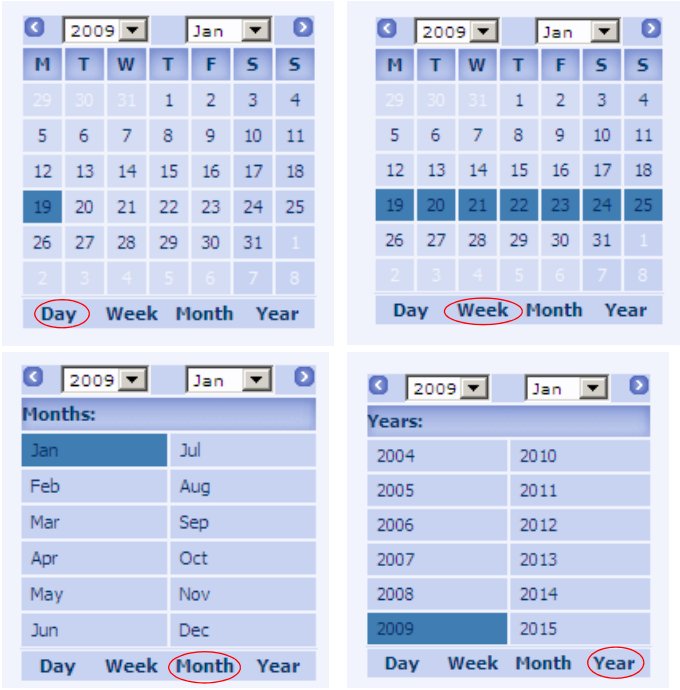


Figure 8-10: Calendar views (day, week, month and year) for selecting the time interval

Chapter 9

General Setting Options

In this chapter:

- "Overview" on page 131
- "Search (Admin only)" on page 134
- "Site and Equipment Configuration" on page 135
- "Customization" on page 150
- "Server Configuration and Management (Admin only)" on page 163
- "Audit Trail" on page 175
- "User Administration (Admin only)" on page 178

9.1 Overview

The Settings item in the main menu contains many options for changing the StarQuality configuration. For each item in the submenu panel, different items appear in the Browser. For non-administrator users, the submenus used to make changes are not displayed, and the other submenus are displayed selectively based on the access rights of the user.

This chapter describes some general setting options available in the StarQuality application. These settings are:

- **Search** - Setting the searching parameters
- **Site and equipment configuration** - Configuring basic and virtual sites and equipment objects
- **Customization** - editing of “public” objects refers to the administrator users, while editing of “private” objects refers to the rest of the users
  - Public/Private charts: Configuring charts)
  - Public/Private menu items: Defining menu items for the submenu panel
  - External links (admin only): Setting the external links to display for basic or virtual site and equipment objects
  - Preferences (non-administrator users only): Configuring displaying preferences
  - E-mail addresses: A list of the e-mail addresses of the users

- **Servers**
  - Licences: Displaying and configuring the currently used and available licences
  - Device and measurement summary: Viewing the list of all basic equipments, and the number of objects in the system for each measurement type
  - Server groups: Configuration of individual measuring groups
  - Server configuration: Modifying the measurement servers and other servers
  - Start/Stop/Status: Remote management of individual servers
  - Server events: Viewing the events that occurred during self-testing
  - Collector load: Viewing the load of the collectors and listing the unsuccessful measurements at a given date.
- **Maps** (admin only): Not applicable
- **Audit Trail** (admin only): Displaying the individual configuration modifications
- **User**
  - User admin (admin only): Adding, deleting and modifying users
  - User rights (admin only): Configuring which privileges/permissions the users should possess
  - Password: Changing password

Other settings that are directly involved with the main system functionality are described in the relevant chapters. Such settings appear in the following list of menu items in the Settings section, with a reference to the exact location of their description:

- **Site and equipment configuration** - also in Chapter 3, “Getting Started” on page 32

- **Scheduled configuration** (admin only) - Automatically scheduled configurations - in Chapter 3, “Getting Started” on page 32
- **Thresholds** - in Chapter 7, “Threshold-Crossing Alarms Monitoring” on page 103
- **Reports** (admin only)- in Chapter 8, “Reports” on page 114
  - » Report variables: Defining the variables used for reports
  - » Report views: Creating reports by selecting variables
  - » Scheduled reports: Setting scheduled report delivering
- **Templates** - in Chapter 6, “Setting Alarm Thresholds” on page 84

9.2 Search (Admin only)

Searching is done only by names of sites and equipment.

Under the Settings > Search menu item you can search the stored objects in the system. This menu is only accessible to the administrator and restricted administrator users.

To start searching for an object:

Specify a searching string, using one of the following methods:

1. Simple search: type the string directly in the input field, and click **OK**.
2. Click **Advanced Search**; an advanced window is displayed, which facilitates the construction of the searching string and contains the following insert fields:
   a. **Search to parent name (Yes/No):** If rou select “yes” the search finds those objects whose parent name meets the conditions (e.g. the parent is the containing site for a piece of equipment).
   b. **Name:** name of the object to be searched. The _ and ? characters match an arbitrary single letter, while % and * match an arbitrary string. The expressions in separate lines will be in OR relation with each other.
   c. **Without:** characters to be ignored by the system (the format is the same as above)
   d. **Type:** the type of the object to be searched. Subtype can also be given for equipment, equipment template and measurement type.
   e. **Results count:** maximum number of results
3. Click **OK**; The results are displayed as well as the searching string as it could be given at simple search.

9.3 Site and Equipment Configuration

The following topics are covered in this section:

- "Object Hierarchy Overview" on page 135
- "Site Configuration" on page 137
- "Equipment Configuration" on page 139
- "Creating and Editing Virtual Equipment" on page 147
- "Linked Equipment" on page 149

9.3.1 Object Hierarchy Overview

9.3.1.1 Non-virtual Objects

There are three non-virtual object types in the system obeying the following three rules:

- **Sites:** Each site has a name and an optional descriptive text. Each site can contain arbitrary many sites and equipments. Each site may reside below another site, and this relation can be modified during the existence of the site. The initial site (ROOT) is an exception to this rule and can only contain sites and cannot be modified or deleted. The name of the site has to be unique only inside the site containing it, although it is recommended to keep it globally unique.

- **Equipment:** Each piece of equipment belongs to a site. This relation can be modified during the existence of the equipment. The name of the equipment has to be unique in the whole system globally.

- **Measurements:** The equipments contain the measurements which cannot be moved to another piece of equipment.

9.3.1.2 Virtual Objects

In the StarQuality system the administrator and the restricted administrator users can create sites, equipments and measurements. These items are immediately available for authorized users too: they appear under for example the Measurements menu item, where the individual elements are displayed in the

same division and in the same way as the administrators have specified during creation.

This initial hierarchy and its objects are called basic or normal objects. Parallel to this structure both administrators and normal users can develop their own structures; moreover, administrators can create public structures as well. Each level of the basic hierarchy has its parallel equivalent:

- Virtual site: corresponds to a site object; can be placed under any basic or virtual site, and can contain virtual sites, virtual equipment and linked basic equipments
- Virtual equipment: corresponds to an equipment object; can be placed under any basic or virtual site, and can contain measurements and private/public charts
- Private/public charts: correspond to the measurement object; in contrast to that, however, it can contain not only one or two measurement values but also arbitrary measurements and report summaries of an arbitrary piece of equipment. It can be placed under virtual equipments manually. It can automatically appear under basic equipment too if it contains a measurement running on the given equipment or a report summary for that equipment

This parallel structure is used, according to the settings under the Preferences menu item, for the display of both measurements and thresholds filtered by site or equipment. Contrary to this, for the Reports menu item one can move along only the basic hierarchy.

Virtual sites and equipments can be private or public objects:

- Administrator users can create both types
- Admin users can only create public objects,
- Other users can only create private objects
- Restricted administrators can modify a public object if they created it.
- The configuration follows the same principles and there is only one restriction: only public virtual sites, equipments and measurements can be placed under public virtual sites, while only the private ones under private virtual sites.

9.3.2 Site Configuration

The administration of the (basic and virtual) sites, (basic and virtual) equipments and measurements is performed under the 'Site and equipment' menu item (Settings > Site and equipment configuration). You can also configure threshold settings (limited to measurement thresholds on a single equipment only, otherwise use the Settings > Threshold menu item, see "Customization" on page 150), and charts (of measurements from the same equipment in the hierarchy only, otherwise use the Settings > Customization > Public Charts (admin only) or Private Charts menu items).

In the Site and Equipment Configuration and the Threshold and Graph Template configurations (admin only), the following elements appear at the top of the page, and stay visible even if the page is scrolled (see Figure 9-1):

- The path showing the actual location within the hierarchy. To return to a higher hierarchy level, click on the elements of the list, except the last one.

NOTE

If you navigate to an equipment through one of its virtual sites, then after any equipment modification you cannot return to that point in the virtual hierarchy, since the application modifies the current location according to the normal hierarchy, i.e. it will show the equipment under its parent site.

- A scroll down list with the following functions:
  - » Go to the Measurements or Alarms main menu item by keeping the selected hierarchy item.
  - » Admin only - Configure external links and hence connect the StarQuality to any WEB based application or to a WEB page (e.g. equipment documentation).
  - » For non-virtual equipment, accessing the threshold and private or public chart template configuration pages
  - » For non-virtual equipment, accessing different equipment modification modes.

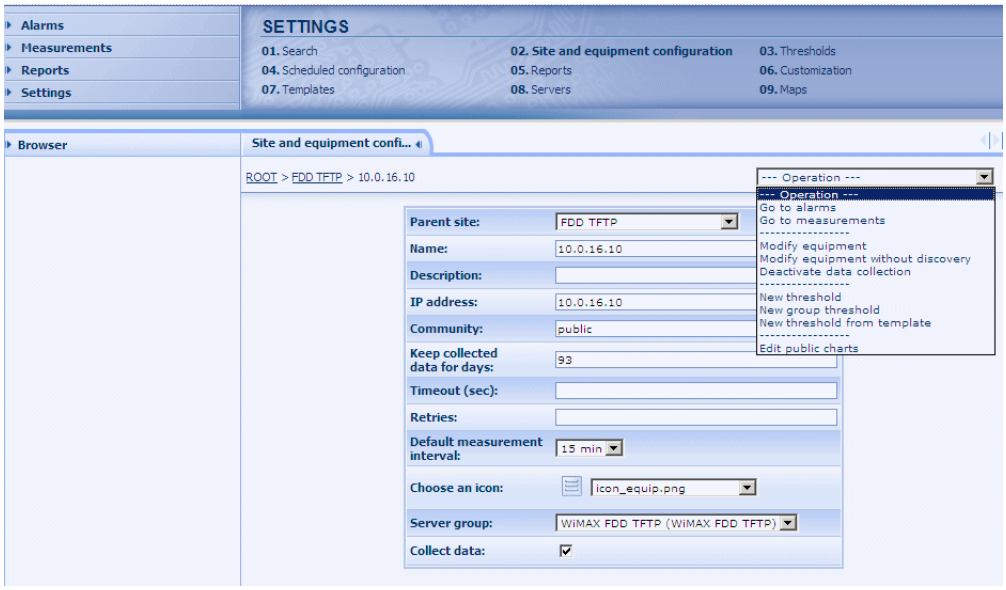


Figure 9-1: Site and Equipment Configuration Window

9.3.2.1 Adding and Editing Sites

You can create objects by selecting the kind of object from the scroll down menu in the table header under the basic or virtual site (see Figure 9-2).

To add or edit a site:

1. Select Settings > Site and Equipment Configuration.
2. Select the site that should contain the new one, then from the Creating dropdown menu select New Site.
3. Fill in the site name, its description and choose the corresponding icon and server group. Click **OK**.
4. To modify a site, click either (**[edit]** or **[del]**) next to the site. Only empty sites can be deleted.

Figure 9-2: Adding a New Site

9.3.2.2 Creating and Editing Virtual Sites

The creation and editing of virtual sites is performed similarly to non-virtual sites (See above). When adding a virtual site, select the New public or New private site item from the pull down menu. The main difference is that under virtual sites, basic sites or equipment cannot be created (the latter can be only linked), therefore no server groups can be specified.

9.3.3 Equipment Configuration

9.3.3.1 Creating New Equipment from Template

The only templates available are either those not assigned to any site (general templates), or templates that are assigned to the current site (specific templates). If there is more than one available template, you choose the proper one. Then the system orders the templates so that the ones belonging to the data collector type of the current site are listed at the beginning.

9.3.3.1.1 Template Based Creation of Single Equipment

To create equipment from template:

1. Select the parent site of the equipment.
2. Select New Equipment from Template from the Creation pull down menu on the Site and Equipment Configuration page. A template selection page is displayed.

3 Select the template upon which to base the equipment setup. A basic setup template page is displayed.

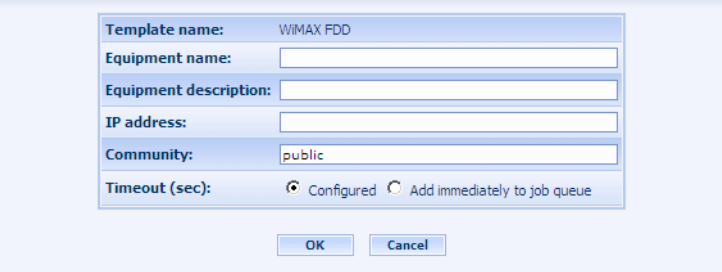


Figure 9-3: Creating New Equipment from Template - Wimax FDD Template

4 Fill in the required parameters. Parameter fields may vary according to the chosen template. Equipment name, equiment description and Community setting fields appear for all template types. Refer also to "Discovery of WiMAX Devices" on page 50.

The following table describes specific parameters according to template types:

Table 9-1: Template Parameters

Item	Description
WiMAX Equipment Templates	
WiMAX FDD/WiMAX EDD TFTP/WiMAXTDD	
IP Address	the equipmnt IP address
Community	public or private
Timeout (sec)	Select whether the application should try to query the equipment: ■ Configured - according to the values specified on the page or in the template ■ Add immediately to job queue - the application defines the equipment as a scheduled configuration, not as a newly created equipment
Server Health Templates	
Default AlvariSTAR	
IP address	<<ip address:>16162>
Community	public

Table 9-1: Template Parameters (Continued)

Item	Description
Timeout (sec)	The duration in seconds by which to stop requesting for communication Default: 10
Retries	The number of times the system retries to establish communication and discovery Default :1
Default measurement interval	Duration in minutes for starting measurements. That is, if 15 min. is set - the system performs a measurement every 15 minutes. Default 15 min.
Choose an icon	A list of designed icons for easier navigation
Timeout (sec)	Select whether the application should try to query the equipment: ■ Configured - according to the values specified on the page or in the template ■ Add immediately to job queue - the application defines the equipment as a scheduled configuration, not as a newly created equipment
Default Oracle	
Connection	<Oracle TNS name> - in case StarQuality and Oracle are on the same machine: Oracle server TNS; in case StarQuality and Oracle are on separate machines: Oracle client TNS (TNS name is defined in the file tnsnames.ora placed in the directory: ORACLE_HOME\NETWORK\ADMIN
User	Username of Oracle user <system>
Password	Password of Oracle SYSTEM user
Right	Permission: Normal SYSDBA SYSOPER
Timeout (sec)	The duration in seconds by which to stop requesting for communication Default: 10

Table 9-1: Template Parameters (Continued)

Item	Description
Retries	The number of times the system retries to establish communication and discovery Default :1
Default measurement interval	Duration in minutes for starting measurements. That is, if 15 min. is set - the system performs a measurement every 15 minutes. Default 15 min.
Choose an icon	A list of designed icons for easier navigation
Timeout (sec)	Select whether the application should try to query the equipment: ■ Configured - according to the values specified on the page or in the template ■ Add immediately to job queue - the application defines the equipment as a scheduled configuration, not as a newly created equipment
Default Unix/Linux	
IP address	IP address of UNIX machine
User	Username of UNIX user
Password	Password of ROOT user
Timeout (sec)	The duration in seconds by which to stop requesting for communication Default: 10
Retries	The number of times the system retries to establish communication and discovery Default :1
Default measurement interval	Duration in minutes for starting measurements. That is, if 15 min. is set - the system performs a measurement every 15 minutes. Default 15 min.
Choose an icon	A list of designed icons for easier navigation

Table 9-1: Template Parameters (Continued)

Item	Description
Timeout (sec)	Select whether the application should try to query the equipment: ■ Configured - according to the values specified on the page or in the template ■ Add immediately to job queue - the application defines the equipment as a scheduled configuration, not as a newly created equipment

5 Select whether the application should try to query the equipment:

» Configured: according to the values specified on the page or in the template

» Add immediately to job queue: the application does not create the equipment, but it defines it as a scheduled configuration.

6 Click **OK**; If you chose “Configured” the application tries to create the equipment with its measurements, thresholds etc. immediately. If the creation is successful, then the page containing the measurements of the equipment is displayed. If not, the application sends an error message and you can save the operation as a scheduled configuration.

9.3.3.1.2 Template Based Creation of Multiple Equipments

In the StarQuality it is possible to create multiple equipments from a template.

See “Discovery of WiMAX Devices” on page 50.

9.3.3.2 Equipment Modification

To modify a piece of equipment:

Use one of the following methods for equipment modification:

■ Equipment Modification in Settings:

a Click **[Edit]** next to the equipment name, or click the equipment icon and select Modify Equuipment from the Operations pull down menu; the system rediscovers the list of measurements that can be carried out on the equipment. The following notice appears on the page:

Figure 9-4: Equipment Discovery Message

The following page is displayed:

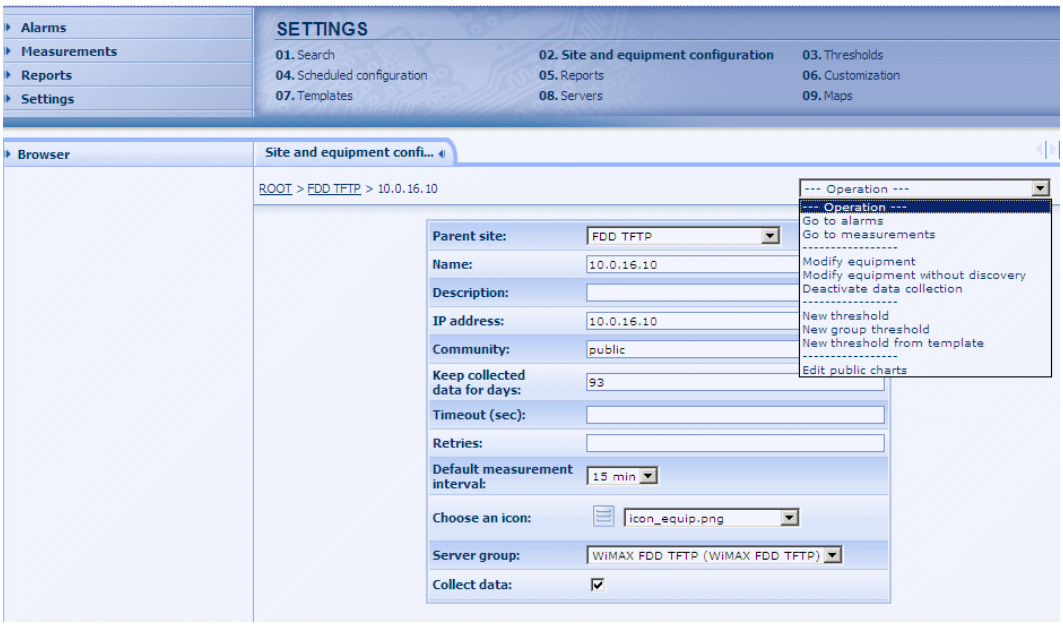


Figure 9-5: Equipment Modification Window

b Modify each parameter and click **OK**; The equipment configuration page is displayed.

- Equipment modification from the site:

  when viewing sites, use the **[edit]** link in the equipment lines, or select Modify Equipment from the Operations pull down menu to display the same page as in the previous item with the only difference that after the modification the system returns to the site page.

- Equipment modification without discovery:

  During Equipment Modification, only the equipment parameters are modified, and not measurements. Accordingly, the StarQuality does not carry out the

equipment discovery, and consequently the modifications can be performed faster, provided you modify equipment parameters only

- Activating/deactivating data collection:

  in the Operations pull down menu, either Activate or Deactivate data collection appears, depending on the equipment status. The turning on and off Data Collection operations corresponds to the setting and clearing of the “Collect data” check-box in Equipment Modification page (see Figure 9-5). After turning off the data collection, the StarQuality does not collect data from the equipment until the switch is turned back, but it does not delete the equipment either. Therefore, the equipment is displayed similarly to other equipment under the Measurements and Alarms menu items, and its threshold and charts definitions are also retained.

9.3.3.3 Viewing the Equipment Configuration

To view the equipment configuration, click on the icon of the equipment in the list; a page with similar structure is displayed, with the following differences:

- Only the active measurements are displayed, and they cannot be modified
- On this page the threshold settings related to the equipment is displayed, which can also be modified from here.

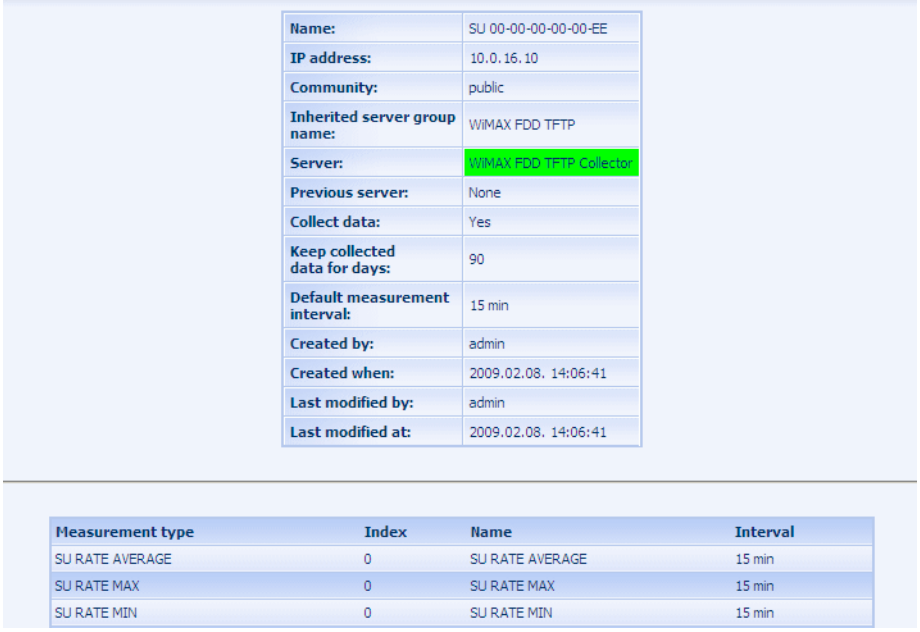

Name: SU 00-00-00-00-00-EE
IP address: 10.0.16.10
Community: public
Inherited server group name: WiMAX FDD TFTP
Server: WiMAX FDD TFTP Collector
Previous server: None
Collect data: Yes
Keep collected data for days: 90
Default measurement interval: 15 min
Created by: admin
Created when: 2009.02.08. 14:06:41
Last modified by: admin
Last modified at: 2009.02.08. 14:06:41
Measurement type Index Name Interval
SU RATE AVERAGE 0 SU RATE AVERAGE 15 min
SU RATE MAX 0 SU RATE MAX 15 min
SU RATE MIN 0 SU RATE MIN 15 min

Figure 9-6: Viewing Equipment with Additional Equipment Parameters

9.3.3.4 Equipment Deletion

You can delete equipments even if measurements belong to them. The deleted equipments, measurements and measurement results will be deleted from the active tables and placed into the archive tables.

The deletion function differs from the equipment deactivation function: for the former one, the measurements can be restarted for the equipment only if they are recreated, and so the thresholds definitions and the public and private charts have to be recreated again. In equipment deactivation, however, the data collection is suspended for the equipment, but nothing is deleted.

9.3.3.5 Threshold Modification for Equipment

Use the Operations pull-down menu to modify thresholds specifically for the selected equipment.

Refer to “Customization” on page 150.

9.3.3.6 Editing Charts for Equipment

Use the Operations pull down menu to modify charts specifically for the selected equipment, or scroll down to the threshold menu at the bottom of the page.

Refer to “Configuring Public and Private Charts” on page 155.

9.3.4 Creating and Editing Virtual Equipment

When creating a virtual equipment, you specify only the name and an optional description. After the creation, the virtual equipment can also be modified.

A newly created virtual equipment has a single parent object (with the current site), but later it can be placed under other sites as well. Accordingly, the parent site is a pull down menu suitable for choosing more elements, where the order in which the elements are displayed depends primarily on whether they have been selected to the equipment before.

To create a new virtual equipment:

1. In *Settings* > *Site and Equipment Configuration* select the site to which to add a new virtual equipment by clicking on its icon (you can also add virtual equipment directly to the ROOT).
2. From the Creating pull-down menu select New Public (admin only) or Private Virtual Equipment.
3. Specify the name and an optional description.

To modify a virtual equipment:

Use the following methods to modify:

- Basic parameters: Click **[edit]** next to the virtual equipment entry and modify the name and description as required. You can also modify the parent basic and virtual sites, using the parent site pull down menu.

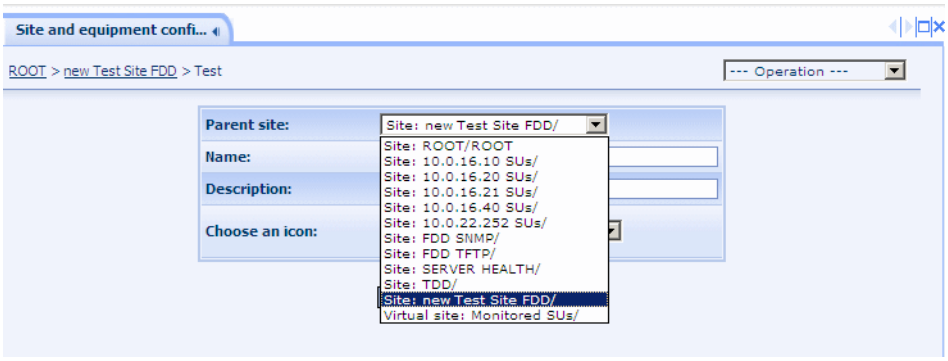


Figure 9-7: Virtual Equipment Modification I

- Assigning measurements and charts:

  a Click on the equipment icon.

  b Select either [add new] to add charts or measurements, or [del] to delete the equipment.

  c To choose a measurement to assign, specify reqired equipment parameters (see Figure 9-8).

  Use the symbols [%] and [_] to match an arbitrary substring or character, respectively. The search results are displayed in a list, where you can select parameters for the creation by setting or clearing the check-boxes in the lines, or changing the state of all check-boxes together with the check-box in the first line (see Figure 9-9).

  d To chose a chart to assign, specify its name. The searching method described above is similar for this step.

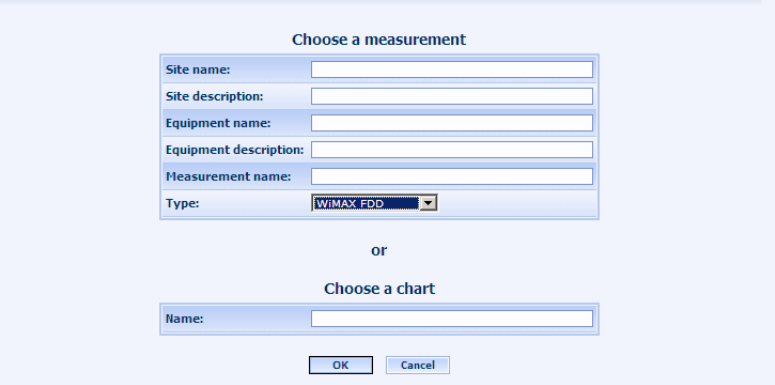


Figure 9-8: Virtual Equipment Modification II

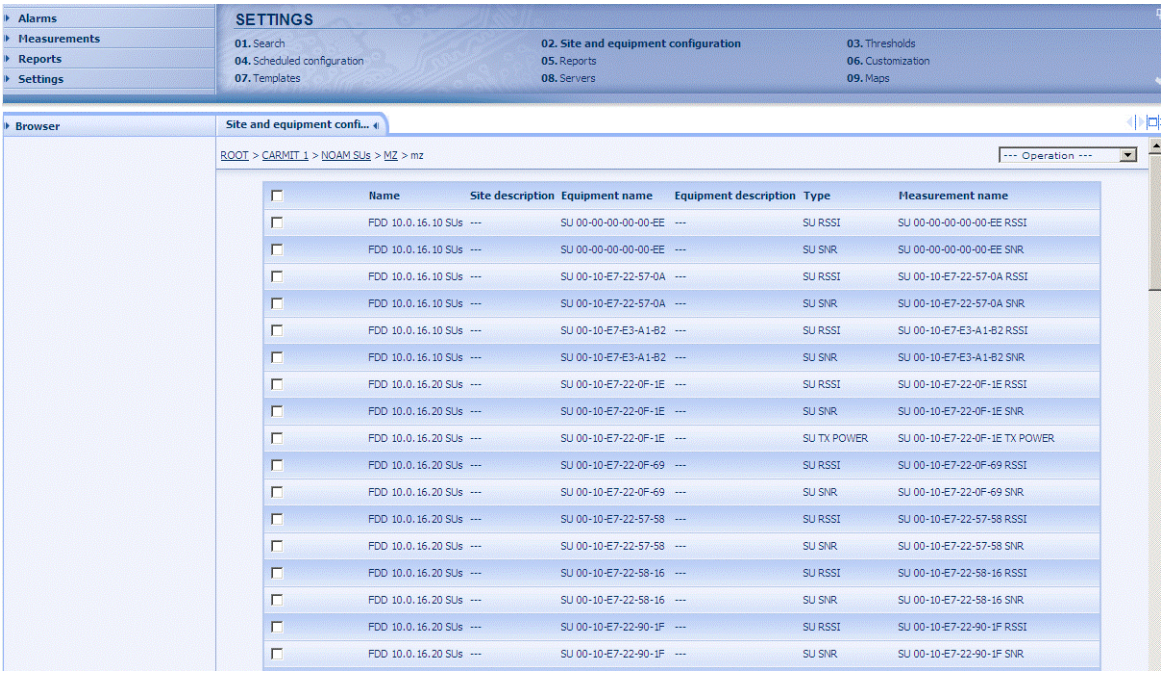

Alarms
Measurements
Reports
Settings
SETTINGS
01. Search
02. Site and equipment configuration
03. Thresholds
04. Scheduled configuration
05. Reports
06. Customization
07. Templates
08. Servers
09. Maps
Browser
Site and equipment confi...
ROOT > CARMIT 1 > NOAM SUs > MZ > mz
--- Operation ---
Name
Site description
Equipment name
Equipment description
Type
Measurement name
FDD 10.0.16.10 SUs --- SU 00-00-00-00-00-EE --- SU RSSI SU 00-00-00-00-00-EE RSSI
FDD 10.0.16.10 SUs --- SU 00-00-00-00-00-EE --- SU SNR SU 00-00-00-00-00-EE SNR
FDD 10.0.16.10 SUs --- SU 00-10-E7-22-57-0A --- SU RSSI SU 00-10-E7-22-57-0A RSSI
FDD 10.0.16.10 SUs --- SU 00-10-E7-22-57-0A --- SU SNR SU 00-10-E7-22-57-0A SNR
FDD 10.0.16.10 SUs --- SU 00-10-E7-E3-A1-B2 --- SU RSSI SU 00-10-E7-E3-A1-B2 RSSI
FDD 10.0.16.10 SUs --- SU 00-10-E7-E3-A1-B2 --- SU SNR SU 00-10-E7-E3-A1-B2 SNR
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-0F-1E --- SU RSSI SU 00-10-E7-22-0F-1E RSSI
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-0F-1E --- SU SNR SU 00-10-E7-22-0F-1E SNR
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-0F-1E --- SU TX POWER SU 00-10-E7-22-0F-1E TX POWER
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-0F-69 --- SU RSSI SU 00-10-E7-22-0F-69 RSSI
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-0F-69 --- SU SNR SU 00-10-E7-22-0F-69 SNR
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-57-58 --- SU RSSI SU 00-10-E7-22-57-58 RSSI
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-57-58 --- SU SNR SU 00-10-E7-22-57-58 SNR
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-58-16 --- SU RSSI SU 00-10-E7-22-58-16 RSSI
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-58-16 --- SU SNR SU 00-10-E7-22-58-16 SNR
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-90-1F --- SU RSSI SU 00-10-E7-22-90-1F RSSI
FDD 10.0.16.20 SUs --- SU 00-10-E7-22-90-1F --- SU SNR SU 00-10-E7-22-90-1F SNR

Figure 9-9: Virtual Equipment Modification - Site Search Results

9.3.5 Linked Equipment

Under the virtual sites you cannot insert or delete equipment, but you can link the already inserted equipment or remove an existing connection.

To create a link to equipment:

1. From the Creating pull down menu select Link Equipment.
2. Specify equipment parameters to search.
3. From the search results, select the equipment to be placed under the virtual site.

9.4 Customization

In this menu item (Settings > Customization) you can make user-specific settings (non-administrator users) and system level settings (admin users).

The following topics are covered in this section:

- "Customizing Display Preferences (Non-Administrator Users Only)" on page 150
- "Customizing Public (Admin only) and Private Menu Items" on page 153
- "Configuring Public and Private Charts" on page 155
- "Setting E-mail Addresses (Admin only)" on page 160

9.4.1 Customizing Display Preferences (Non-Administrator Users Only)

NOTE

This section is applicable to Non-administrator users only

You can select and modify the display preferences per your needs.

To customize display preferences:

1. From the main menu select Settings.
2. From the Settings panel select Customization > Preferences. The submenu has a single page only.

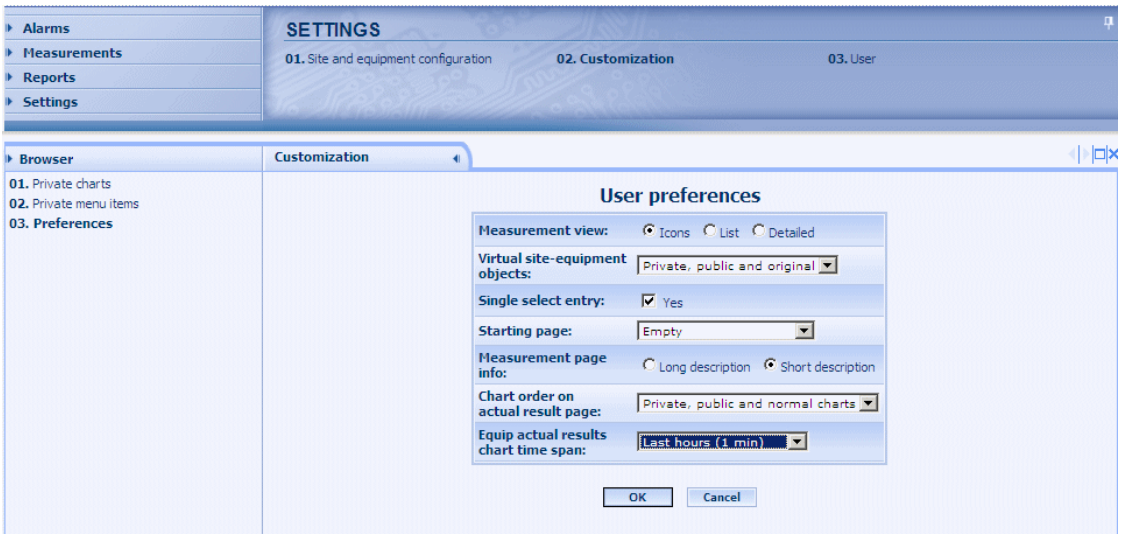


Figure 9-10: User Preferences

3 Modify the preferences as required:

- **Measurement view:** select the default view for the site and equipment configurations. For every page the view can be changed temporarily with the small icons located at the top of the page.

  - **Icons:** Large icons representing the sites and equipment, up to five in a row.
  - **List:** Small icons representing the sites and equipment, up to five in a row.
  - **Detailed:** a single element per row with the following columns:
    - **First column:** The element icon, this differentiates the equipment from the sites
    - **Name:** The name of the element
    - **Description:** The description of the element
    - **Equipment data:** Used only for equipment, contains all measurement server specific data of the equipment (e.g. community for SNMP).

- **Virtual site-equipment hierarchy:** This controls whether the private and public virtual, or the default hierarchy should be displayed below the Measurements > Current measurements submenu. The possible settings are:
  - Private and original
  - Public and original
  - Private, public and original (default)
  - Only private
  - Only public
  - Private and public
- **Single select entry:** If this option is set, then:
  - Under the “Equipment Search” menu item, the equipment will be immediately displayed if the search has a single result only
  - Below the “Current measurements” menu item the page for a given piece of equipment will be displayed immediately if the user has the rights for a single piece of equipment only, furthermore the elements of a site will also be displayed if only a single site could be accessed.
- **Starting page:** Choose the value from the scroll down list:
  - **Empty:** the initial page is displayed for the user after login
  - **Menu items:** the page below the given menu item is displayed for the user after login, its value can be one of the menu items below Alarms and Measurements
- **Measurement page info:** The amount of equipment information displayed on the page containing the measurements.
- **Chart order on actual result page:** Whether the public and/or private charts should be displayed on the base measurement page accessed through the Current measurements menu item. Moreover, if they are displayed, then in what order (this setting does not influence the display of virtual equipment, there only created charts are displayed in the order they were configured)

- **Equipment actual results chart time span:** On the equipment measurement page the chart resolution cannot be specified, instead the user can set the value here. By default this is the suggested 5-minute resolution daily chart. The smallest chart on the page displaying the details of individual measurements is set based on the time interval of the measurement, but in case of public and private charts the value given here is used.

4 Click **OK**; The modifications is saved and the page is refreshed with the modified data.

9.4.2 Customizing Public (Admin only) and Private Menu Items

You can create shortcut menu items under the Alarms and Measurements main menus.

To edit a menu item:

1 From the Settings > Customization select Public/Private Menu Items; The Menu Item Configuration page is displayed.

NOTE

The menu item configuration can also be performed from the Alarms and Measurements main menu items: after selecting the object, select the Save as Submenu action the Operation pull down menu on the right-hand side (see also "Saving Items as A Submenu" on page 83.

Figure 9-11: Menu Item Configuration

2 Click **[edit]**; The following page is displayed:

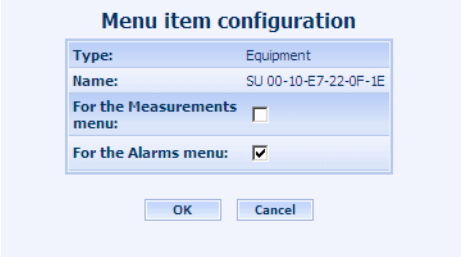


Figure 9-12: Menu Item Editing

3 Set the menu in which the edited menu item will be displayed. For charts, only the "for the Measurements menu" option can be selected.

4 Click **OK**; The Alarms or Measurement pages wil be updated according to your selections.

To add a new menu item:

1 Select a schematic map (created by the administrators).

2 Select the virtual or real site or equipment to which the menu item points.

3 In Settings > Customization select Public/Private Menu Item; the Menu Item Configuration window is displayed (see Figure 9-11).

4 Click **[add new]**; A search window appears where a search string has to be specified (the % and _ characters can be used, * and ? characters are no applicable) to obtain the list of matching elements.

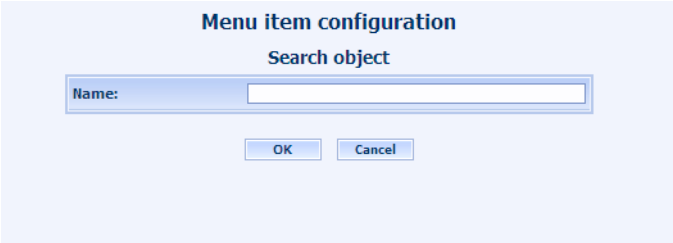


Figure 9-13: Menu Item Configuration - Search Object

5 Select the item to add to the Alarms or Measurement submenus and Click **OK**.

9.4.3 Configuring Public and Private Charts

Administrators and restricted administrators can edit private and public charts, while admin users can edit only public charts, and every other user - only private charts. The editing of both types takes place on pages structured almost identically; therefore, both are discussed herein, while indicating the differences between them.

9.4.3.1 Editing and Creating Charts

When modifying already existing elements in the chart, the same fields are displayed with the only difference that the name of the previously selected object in the object field cannot be changed.

To initiate chart editing:

1 Access the Chart Configuration page (Figure 9-14) using one of the following methods:

- Select Settings > Customization > Public charts or Private charts submenu items.
- Select Settings > Site and Equipment Configuration (when a non-virtual site or equipment is selected in the hierarchy). This case differs from a menu based direct access in the following points:
  - It is not necessary to specify the site and equipment name filter conditions when creating a new chart because the results are filtered automatically for the object at which the user started editing the chart.
  - There is a [back] link on the starting page, which leads back to the appropriate site or equipment.
  - Similarly to the Site and equipment configuration, both the location in the site equipment hierarchy as well as a pull down menu with the usual operations appear on the top of the page.
  - If the chart template configuration is opened from the equipment page, then for the template based creation of new charts the system automatically offers the names of the equipment and template together for chart name. However in the other case only the template name will

be offered, which in general will not be unique in the system without modification (see below)

- If the chart template configuration is opened from the equipment page, it is possible to use all chart templates at the same time, which means that you can create all charts for the equipment templates in one step.

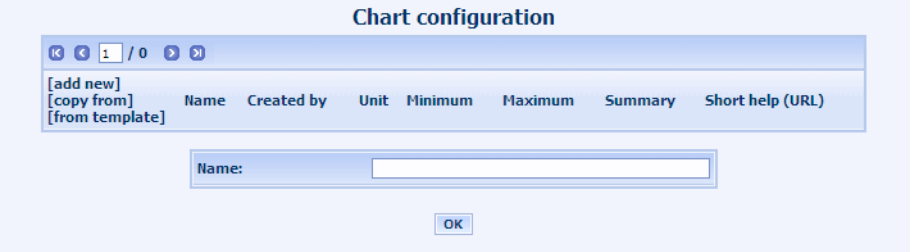


Figure 9-14: Chart Configuration (accessed from the Equipment page)

To modify chart elements:

1 Edit the information in the charts page as required. The page contains the list of private or public charts together with the following attributes:

- Editing links:
  - `[add new]`: creates a new chart
  - `[copy from]`: creates a chart based on an existing one. Both in the private and the public charts, you can choose from the list of your private charts and the public charts that you have access to.
  - `[from template]`: creates a new chart based on a template (see "Viewing Charts " on page 160)
  - `[from each templates]`: creating new charts from templates appears only if the chart creation is initiated from the equipment page. This list allows connecting of each chart to an existing template.
  - **[edit]**: edits the chart attributes that are displayed here
  - **[del]**: deletes chart
  - **[members]**: edits the members of the chart

- **Name:** The name of the chart. For public charts, it should be unique among the public charts, and for private charts it should be unique among the public and private charts. Accordingly, a public chart can be created with a name that already exists under the private charts of the user, or the same chart name can appear in the set of private charts belonging to many different users

- **Created by:** The name of the chart designer, naturally it is used for public charts only

- **Unit:** Description of the value axis of the chart

- **Minimum:** The chart minimum as a percentage or a concrete value. If it is not set, the minimum value is at 0. A percentage value is interpreted with respect to the average of the values displayed on the current chart

- **Maximum:** The chart maximum as a percentage or a concrete value. If it is not set, the maximum value is the current maximum value displayed in the chart. A percentage value is interpreted with respect to the average of the values displayed on the current chart

- **Summary:** determines if aggregate measurement values should be calculated in the table that corresponds to the chart. It can be turned on only if the chart has no element for which the Zero value (see below) is set to the previous zero value. Moreover, if it is turned on and such an element is created during chart modification or creation, it is turned off automatically.

- **Short description (URL):** This field is displayed only for administrator users. In this field a URL can be specified. If it is set, for each chart a Help sign appears for the users when the chart is viewed, and when clicking this link, the page pointed by the given URL is displayed in a new window.

NOTE

The editing and creating of these pages are not part of the StarQuality system

2 If you have administrator and restricted administrator user permissions, in addition to the above fields, you can change whether the chart is public or private.

3 Under the `[members]` link is the list of chart elements of the current chart. The items of this table are the following in order:

- Editing links:
  - **[add new]**: creating a new element
  - **[edit]**: modifying an element
  - **[del]**: deleting an element
- **Order:** The order of the element within the chart. The order not only determines the drawing order of the elements on the chart but it also influences the reference point of the chart base. The order can be modified on this starting page with the green down and up arrows.
- **Name:** The name of the element, which appears in the table of values on the chart
- **Object:** The object for which the element contain data. For chart elements the object can be a basic site or basic equipment report. For measurement chart elements it can be an interface or other measurement.
- **Threshold or report variable:** Depending on the type of the element (report or measurement) it contains the name of the threshold violation or the report variable to be displayed
- **Field:** Which measured value belonging to the object, and optionally to the report variable, should be displayed by the chart element:
  - For measurement chart elements this can be an uplink or downlink.
  - For report charts this can be minimum, maximum, average, etc.
- **Type:** The representation of a chart element should be a line, an area or a bar
- **Chart base:** Selects the chart base of the chart element. With the exception of the first element (where naturally the 0 value necessarily corresponds to the zero) it is possible to choose, whether the chart base of the chart element should agree with the current chart base of the previous chart element (chart elements “drawn onto each other”) or with the current value of the previous chart element (chart elements “drawn over each other”). The following example shows the two different diagrams for the same value pair.
- **Color:** Element color

- **Peak color:** If the chart resolution (e.g. 15 minutes, 2 hours, etc.) is smaller than the value resolution (e.g. 15 minutes, 3 minutes, etc.), the application shows the calculated average on the chart (both on the chart defined here and on the default one). If a color is set here, the average values are displayed in addition to the maximum values of the data.

- **Transparent:** Determines whether the other possible chart elements behind the element should be visible. Its use is recommended if the type of the element is area or bar, and the value of the zero point parameters is not “previous value” but “previous zero”

- **Assume zero when value is missing:** If there is no measurement value at a given time, the application can draw the chart according to the last value, or assume the missing value to be zero.

To create a new element:

1. Select the type of the measurement or the report variable; The following configurable elements appear from the list mentioned above: name, object, and threshold (if a measurement is selected currently, see below), field, type, chart base, color, peak color, and zero value.
2. Edit the elements as required. Note that the order does not appear since the new element receives the last sequence number automatically. Depending on the object, maximum three pull down menus are displayed:
   - » In case of site level report variable: site pull down menu
   - » In case of equipment level report variable: site and equipment pull down menus
   - » In case of measurement element: site, equipment and measurement pull down menus

   The equipment pull down menu always displays the list of equipment directly under the currently chosen element in the site menu, while the measurement menu always shows the measurements under the currently selected equipment. When the selection of the pull down menus is changed, the page reloads automatically to reflect the current status.
3. Click **OK** to select the desired element

NOTE

The OK button appears only if all the necessary object pull down menus have been displayed according to the report variable or measurement selected in the first step. For example, when measuring communication traffic, this button appears only if a piece of equipment on a site and a measurement under that have been selected.

9.4.3.2 Deleting Chart Elements

Users can delete a chart element using the [del] link. However note the following limitations:

- If the user is not administrator and the user rights to an object are revoked, then the corresponding private chart elements are deleted too.
- When deleting an object, it is automatically removed from all chart definitions. If a chart becomes empty after such an operation, then the chart is deleted automatically as well.

9.4.3.3 Viewing Charts

By navigating the site-equipment hierarchy starting from the “Measurements” menu item, all private charts can be accessed and also public charts for which the user has access rights.

9.4.4 Setting E-mail Addresses (Admin only)

All users (except limited ones) may set up more than one e-mail address in the system to which they can send scheduled reports and, in case of administrators information, on threshold violations.

If an e-mail address is deleted from the list, no report or threshold violation information is sent to that address. Consequently, if all e-mail addresses are deleted for a particular scheduled report, the report will not be generated anymore although it is not deleted from the system.

To set an e-mail address:

1. From Settings > Customization select E-mail Addresses; A list of addresses appear.
2. Click **[add new]**; The E-mail Address Configuration window is displayed.

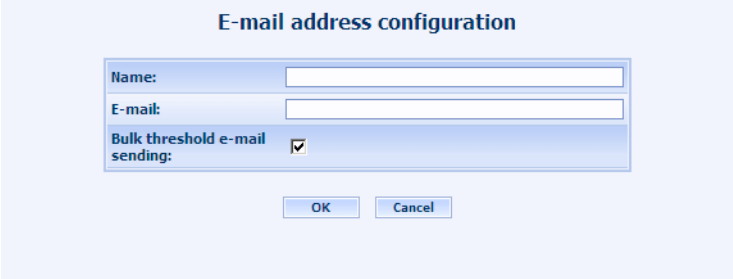


Figure 9-15: E-mail Address Configuration

3 Specify the following:

- **Name:** It must be unique for each user. This name will appear in the selection list for scheduled reports and thresholds.
- **E-mail:** The e-mail address where the e-mails should be sent.
- **Multiple threshold violations in one mail:** In case of threshold violations it is possible to send all threshold violations that have occurred together in a single e-mail instead of sending them separately.

9.5 Templates (admin only)

- **MIB upload:** Not applicable.
- **Measurement type definitions:** Not applicable.
- **Equipment templates:** Not applicable.
- **Threshold templates:** Editing threshold templates (see “Setting Alarm Thresholds” on page 84)
- **Chart templates:** Not applicable. Editing chart templates (see “Viewing Charts ” on page 160)
- **Exclusion window template:** Defining time frames in which thresholds can be activated/deactivated

9.6 Server Configuration and Management (Admin only)

The following topics are covered in this section:

- "Overview" on page 163
- "Managing Licences" on page 164
- "Device and Measurement Summary" on page 166
- "Server Configuration" on page 166
- "Start/Stop/Status of Servers" on page 170
- "Viewing Server Events" on page 171
- "Collector Load" on page 172

9.6.1 Overview

Server configuration and management refers to two server types:

- Default server: e.g. the application manager or the report counting server. The number of servers cannot be extended or limited.
- Measurement servers: arbitrary number of these can exist and each must belong to a measurement server group. There are three types of measurement servers matching the types given for the measurement server groups:
  - » Active and discoverable: the measurements are actively made by the StarQuality application through the available API. The measurements supported by discoverable equipment can be discovered or queried through a suitable management protocol: e.g. the list of interfaces on network equipment or the list of disk partitions on a UNIX server. These are discovered and automatically monitored by the StarQuality (e.g. it automatically deletes them if the measurement has ended or the measurement name has changed). Even though the StarQuality automatically searches the measurements in such a case, they can also be manually recorded. If such a measurement is created, subsequent

automatic discovery will not occur. Accordingly, if the measured object is deleted from the active equipment, it will not disappear from the StarQuality. This type of measurement will again be monitored automatically only if a new manual discovery is performed on the equipment through the web interface and it is saved afterwards. For certain discoverable servers there are measurement types (e.g. servers measuring IPSec) where no discovery is performed.

- Active but non-discoverable: the measurements are actively made by the StarQuality application through the available API, but it is impossible to discover and monitor the measurements of the equipment. This is typical when parameters need to be set for the measuring system in order to start the measurements (e.g. one or more WEB server addresses should be given to measure HTTP services).
- Passive and optionally capable of auto-discovery: the StarQuality only collects files containing measurement values in certain defined formats, and optionally records and deletes the pieces of equipment and measurements based on the collected data.

The Servers menu includes five submenus, described herein.

9.6.2 Managing Licences

The Licences submenu is available only for admin users. You can edit the license table and compare the number of available and required licences. If there are fewer licences available than required for operating the system, or any of the licenses has expired, then users receive a warning message during the login process. Nevertheless, the system still operates with full functionality: measurements, report and threshold evaluations are made.

Licence data can only uploaded and deleted but not edited. The individual columns are:

- Editing links:
  - `[add new]`: adding a new licence file
  - `[del]`: deleting a licence entry
- **Name:** Name of the licence
- **End date:** Expiration date of the given licence. If it is unlimited, then use “never”

- **Quantity:** Quantity of licences in the system. Can be unlimited.
- **Needed:** Quantity required to operate the system
- **Error type:** In those rows where the licence is invalid an error message is shown and the row is displayed in red. Possible error messages:
  - » Wrong checksum: invalid line since someone directly modified the licence entry
  - » Expired: licence was valid for a limited period only which has expired
  - » No licence found: the given licence entry is required but not found
  - » Low licence quantity: the quantity of the given licence is not enough for the system

A licence can be added by providing a licence file. During this process the application keeps the already existing licence entries or modifies them if they exist in the file.

To add a new licence:

1. Place the licence file on the computer from which you activated the client.
2. From Settings select Servers; the Servers tab is displayed.
3. Select Licences. The Licences Configuration window is displayed.
4. Click **[add new]** and browse for the file containing the license.
5. Click **OK**. A list detailing the licenses is displayed.
6. Verify that the entry in the license list is not colored red.

9.6.3 Device and Measurement Summary

You can display a list of all basic equipments, and for each measurement type - the number of objects in the system.

To use the summary list:

From Settings select Servers > Device and Measurement Summary; A table of all devices is displayed, indicating the site and equipment name, IP address, F H C A and total number of measurements.

Browser
Servers
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Summary table for all equipments
Site name
Equipment name
IP address
F H C A
Sum
[view] FDD TFTP 10.0.16.10 --- 29 29
[view] FDD SNMP 10.0.16.20 --- 43 43
[view] FDD SNMP 10.0.16.21 --- 15 15
[view] TDD 10.0.16.40 --- 27 27
[view] TDD 10.0.22.252 --- 40 40
[view] SERVER HEALTH 172.30.105.216 --- 135 135
[view] SERVER HEALTH 216 --- 43 43
[view] SERVER HEALTH 216a --- 0
[view] SERVER HEALTH A* 172.30.105.210 172.30.105.210:16162 37 37
[view] SERVER HEALTH A*2 172.30.105.210:16162 37 37
[view] SERVER HEALTH Free text --- 0
[view] SERVER HEALTH OR2 --- 101 101
[view] SERVER HEALTH OR3 --- 0
[view] SERVER HEALTH Oracle --- 176 176
[view] FDD TFTP/10.0.16.10 SUs SU 00-00-00-00-00-EE --- 9 9
[view] FDD SNMP/10.0.16.20 SUs SU 00-10-E7-22-0F-1E --- 3 3
[view] FDD SNMP/10.0.16.20 SUs SU 00-10-E7-22-0F-69 --- 3 3
[view] FDD SNMP/10.0.16.21 SUs SU 00-10-E7-22-17-B2 --- 3 3
[view] FDD SNMP/10.0.16.21 SUs SU 00-10-E7-22-31- --- 3 3

Figure 9-16: Device and Measurement Summary

9.6.4 Server Configuration

Server configuration is available for the admin users only. You can add new servers, or delete and modify existing servers.

To access the Server Configuration:

1 From the main menu select Settings.

2 From the Settings panel select Servers > Server Configuration; A list of all configured servers is displayed.

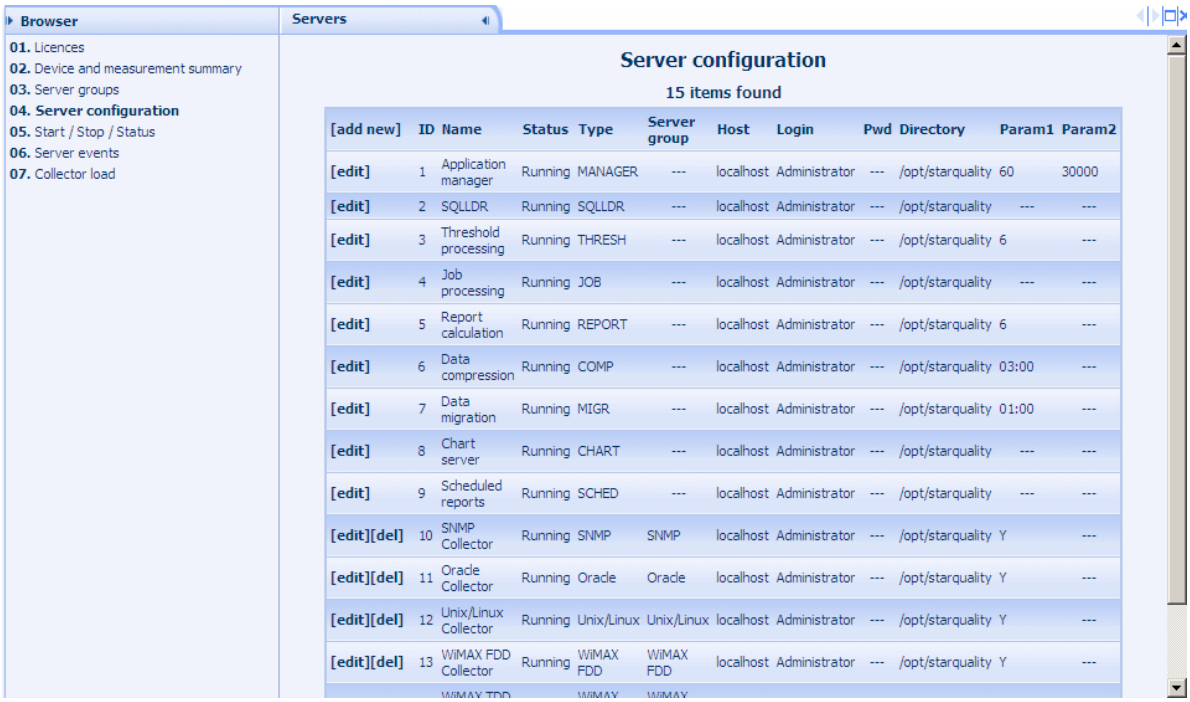

Browser
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Servers
Server configuration
15 items found
[add new] ID Name Status Type Server group Host Login Pwd Directory Param1 Param2
[edit] 1 Application manager Running MANAGER --- localhost Administrator --- /opt/starquality 60 30000
[edit] 2 SQLLDR Running SQLLDR --- localhost Administrator --- /opt/starquality --- ---
[edit] 3 Threshold processing Running THRESH --- localhost Administrator --- /opt/starquality 6 ---
[edit] 4 Job processing Running JOB --- localhost Administrator --- /opt/starquality --- ---
[edit] 5 Report calculation Running REPORT --- localhost Administrator --- /opt/starquality 6 ---
[edit] 6 Data compression Running COMP --- localhost Administrator --- /opt/starquality 03:00 ---
[edit] 7 Data migration Running MIGR --- localhost Administrator --- /opt/starquality 01:00 ---
[edit] 8 Chart server Running CHART --- localhost Administrator --- /opt/starquality --- ---
[edit] 9 Scheduled reports Running SCHED --- localhost Administrator --- /opt/starquality --- ---
[edit][del] 10 SNMP Collector Running SNMP SNMP localhost Administrator --- /opt/starquality Y ---
[edit][del] 11 Oracle Collector Running Oracle Oracle localhost Administrator --- /opt/starquality Y ---
[edit][del] 12 Unix/Linux Collector Running Unix/Linux Unix/Linux localhost Administrator --- /opt/starquality Y ---
[edit][del] 13 WiMAX FDD Collector Running WiMAX FDD WiMAX FDD localhost Administrator --- /opt/starquality Y ---

Figure 9-17: Server Configuration Window

The following information is displayed in the table:

- **ID:** unique identifier of the server. It is used when starting and halting the server from the command line, or when displaying the summary of the collected data for the measurement servers.
- **Name:** the name of the server
- **Status:** status of the server: running, not running, or unknown; Refer to “” on page 169
- **Type:** the type of the server; or the type of the server group for collector servers: SOAP, Manager, Event
- **Server group:** for a measurement server the name of its group
- **Host:** the host computer of the server
- **Login:** the user name used to login to the machine

- **Pwd:** user password. If it is not set, the application can still log in if SSH key-based authentication is configured

- **Directory:** the directory of the StarQuality application. The name of the directory should be an absolute path (i.e. it should started with /)

- **Param1 and Param2:** Further parameters depending on the type of the server, displayed with the appropriate name.

  - **Measurement server:**

    - Persistent SSH and SFTP connection (Param1): Whether the SQLLDR and the MANAGER server can keep a persistent SSH and SFTP connection with the measurement server or not. Persistent connection is strongly recommended since nonessential logins and logouts can be avoided. There is only one case when non-persistent connection is necessary: in the case of certain former SSH implementations the established SFTP connection has fully utilized the CPU of the target machine, even when no operation was executed

    - How many seconds should the system wait for collector result if it is not running (Param2).

  - **Application manager:**

    - Cycle (in sec): The number of seconds waited between server monitoring

    - Number of files: During self-testing the system checks the number of files in the tmp/done directory that executes the data loading component. If this is higher than the value specified here, the system generates a server event and notifies the operator.

  - **Data compression and moving and partition creation:** the time of running (HH:MM): These servers execute operations once a day (though they are continuously running). Partition creation is an exception since the daily operation is executed immediately at startup.

  - **Threshold procession and report creation:** the maximum time period (in hours) of former data to be processed at startup. At startup both of these servers determine the time up to which the individual thresholds as well as report variables were processed, and if the hour of the last processing is smaller than the current hour minus the specified time period, then they consider the processing to be done up to the current hour minus the specified time period. For example: if the five-minute thresholds were

processed by the server up to 8:55, and it is restarted at 18:05 (same day), and the set value is 6, then processing will only be continued from 12:00

9.6.4.1 Editing Server Configuration

During the configuration of the servers the following fields can be modified: name, host, login, password and the optional parameters. The host, login and directory parameters can only be modified if the given server is not running.

To edit a server configuration:

1 Click **[edit]** next to one of the entries; the Server Configuration editing window is displayed.

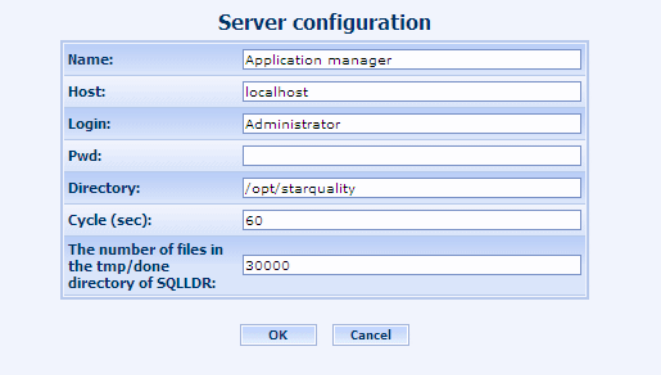


Figure 9-18: Editing Server Configuration

2 Specify the required information: name, host, login, password and the optional Param1 and Param2.

3 Click **OK**.

9.6.4.2 Adding a New Server

Adding and deleting a server is possible for measurement, SOAP, secondary application manager and secondary event receiver servers.

When a measurement server is added, a server group is also added to the table in the Server Configuration window.

To add a new server:

1 In the Server Configuration window, click **[add new]**; The server Configuration editing window is displayed.

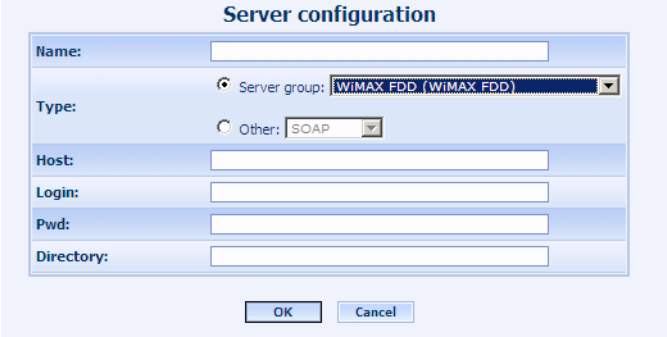


Figure 9-19: Server Configuration - Adding New

2 Specify the required information: Name, type, host, login, password and directory.

3 Click **OK**.

9.6.5 Start/Stop/Status of Servers

This feature is available for the admin and administrator users only. The page displays the current status of servers by color coding. The columns of the table are identical to the table in "Server Configuration" on page 166 (except for password). You can start and stop the servers and check for their status manually, in addition to the automatic server check of the application manager.

The page is continuously refreshed. After starting and stopping server(s) the subsequent refreshing also checks their status.

The servers can be in three different statuses: Running, Not running and Unknown. Unknown status means that it cannot be determined whether the server is running or not: for example it is impossible to login with the specified data to the computer running the server.

Only measurement servers with "running" status will be assigned to measure equipments. A server may be configured to the equipment, and another server is modified to be a secondary measurement server. Each measurement server measures all those pieces of equipment where it is a primary or secondary server, and after a certain period it deletes secondary server registrations where it is the primary server. Due to this algorithm no measurement would be omitted even if, for example in a measurement server group, one of the servers is started when another server has already been run: even though load balancing transfers a

certain part of the equipment, both of them will measure the transferred pieces of equipment temporarily.

To use the Server Start/Stop/Status window

1 From Settings select Servers > Start/Stop/Status. A list of all servers is displayed. Running servers are colored green, Not running servers are colored red.

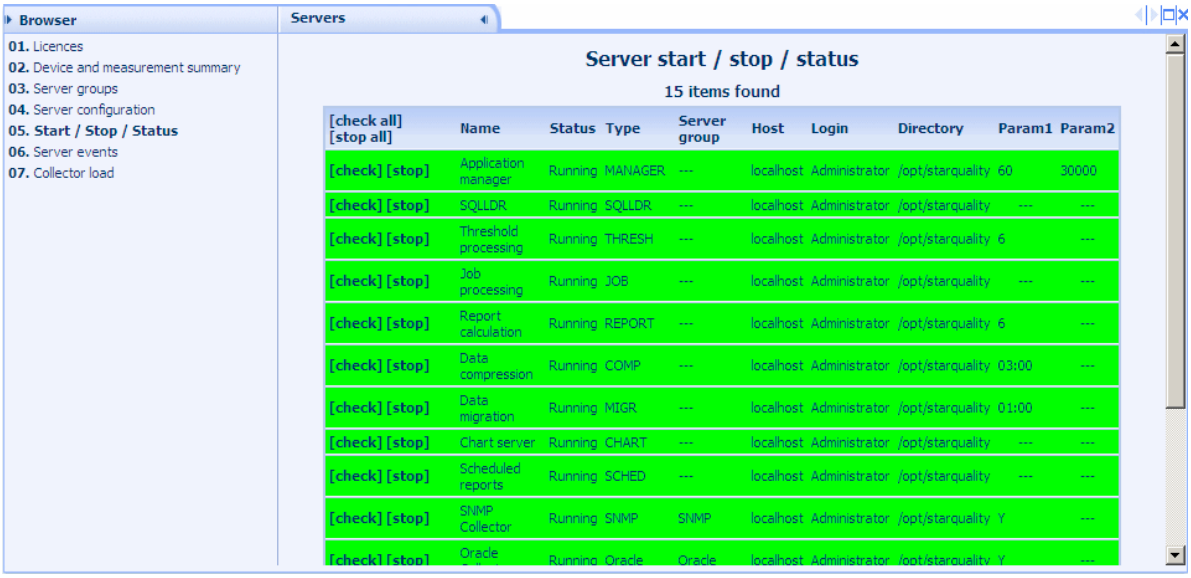

Browser
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Servers
Server start / stop / status
15 items found
[check all] [stop all] Name Status Type Server group Host Login Directory Param1 Param2
[check] [stop] Application manager Running MANAGER --- localhost Administrator /opt/starquality 60 30000
[check] [stop] SQLLDR Running SQLLDR --- localhost Administrator /opt/starquality --- ---
[check] [stop] Threshold processing Running THRESH --- localhost Administrator /opt/starquality 6 ---
[check] [stop] Job processing Running JOB --- localhost Administrator /opt/starquality --- ---
[check] [stop] Report calculation Running REPORT --- localhost Administrator /opt/starquality 6 ---
[check] [stop] Data compression Running COMP --- localhost Administrator /opt/starquality 03:00 ---
[check] [stop] Data migration Running MIGR --- localhost Administrator /opt/starquality 01:00 ---
[check] [stop] Chart server Running CHART --- localhost Administrator /opt/starquality --- ---
[check] [stop] Scheduled reports Running SCHED --- localhost Administrator /opt/starquality --- ---
[check] [stop] SNMP Collector Running SNMP SNMP localhost Administrator /opt/starquality Y ---
[check] [stop] Oracle Running Oracle Oracle localhost Administrator /opt/starquality Y ---

Figure 9-20: Server Status

2 Click either **Start** or **Stop** to change the status, or **Check** to manually check and refresh the status.

9.6.6 Viewing Server Events

The application manager module (or modules if the secondary application manager is also installed) periodically performs different verifications in connection with the database and the machines running StarQuality. You can view the results of these verifications and the log entries created when modules are started or stopped.

To access the Event Server list:

From Settings select Servers > Server Event; The server events list is displayed.

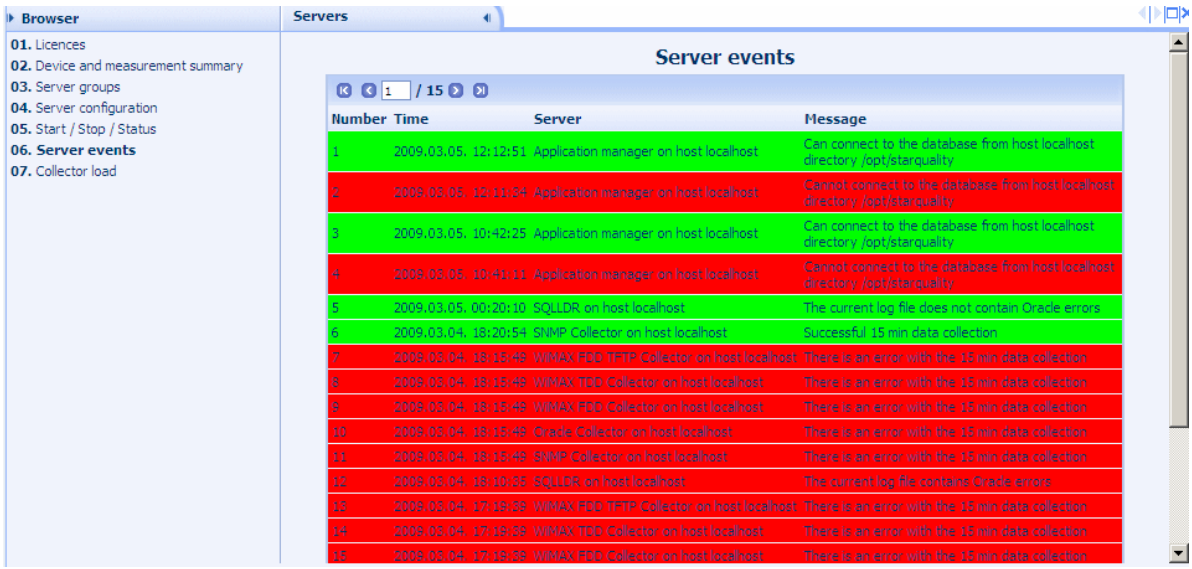

Browser
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Servers
Server events
1 / 15
Number Time Server Message
1 2009.03.05. 12:12:51 Application manager on host localhost Can connect to the database from host localhost directory /opt/starquality
2 2009.03.05. 12:11:34 Application manager on host localhost Cannot connect to the database from host localhost directory /opt/starquality
3 2009.03.05. 10:42:25 Application manager on host localhost Can connect to the database from host localhost directory /opt/starquality
4 2009.03.05. 10:41:11 Application manager on host localhost Cannot connect to the database from host localhost directory /opt/starquality
5 2009.03.05. 00:20:10 SQLLDR on host localhost The current log file does not contain Oracle errors
6 2009.03.04. 18:20:54 SNMP Collector on host localhost Successful 15 min data collection
7 2009.03.04. 18:15:49 WiMAX FDD TFTP Collector on host localhost There is an error with the 15 min data collection
8 2009.03.04. 18:15:49 WiMAX TDD Collector on host localhost There is an error with the 15 min data collection
9 2009.03.04. 18:15:49 WiMAX FDD Collector on host localhost There is an error with the 15 min data collection
10 2009.03.04. 18:15:49 Oracle Collector on host localhost There is an error with the 15 min data collection
11 2009.03.04. 18:15:49 SNMP Collector on host localhost There is an error with the 15 min data collection
12 2009.03.04. 18:10:05 SQLLDR on host localhost The current log file contains Oracle errors
13 2009.03.04. 17:19:39 WiMAX FDD TFTP Collector on host localhost There is an error with the 15 min data collection
14 2009.03.04. 17:19:39 WiMAX TDD Collector on host localhost There is an error with the 15 min data collection
15 2009.03.04. 17:19:38 WiMAX FDD Collector on host localhost There is an error with the 15 min data collection

Figure 9-21: Server Events Window

9.6.7 Collector Load

This feature is available for the admin and administrator users only. You can view results for all possible measurement times, and the list of measurements that were unsuccessful at a given time.

To use the Collector Load Information:

1 From Settings select Servers>Collector Load; The list of measurement servers is displayed, with the following information:

- General information: name, type, status and group
- Size of the data files created by the server
- Total number of equipments connected
- Total number of measurements performed
- F H C A - identifies the type of the measurement: F for traffic, H for error, C Deprecated and A for Alvarion measurements.

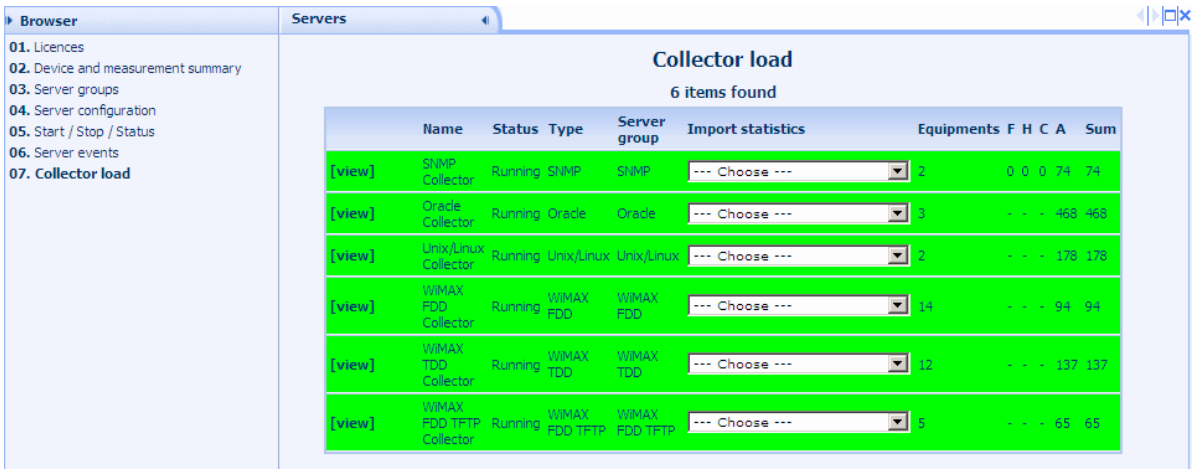

Browser
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Servers
Collector load
6 items found
Name Status Type Server group Import statistics Equipments F H C A Sum
[view] SNMP Collector Running SNMP SNMP --- Choose --- 2 0 0 0 74 74
[view] Oracle Collector Running Oracle Oracle --- Choose --- 3 - - - 468 468
[view] Unix/Linux Collector Running Unix/Linux Unix/Linux --- Choose --- 2 - - - 178 178
[view] WIMAX FDD Collector Running WIMAX FDD WIMAX FDD --- Choose --- 14 - - - 94 94
[view] WIMAX TDD Collector Running WIMAX TDD WIMAX TDD --- Choose --- 12 - - - 137 137
[view] WIMAX FDD TFTP Collector Running WIMAX FDD TFTP WIMAX FDD TFTP --- Choose --- 5 - - - 65 65

Figure 9-22: Collector Load

2 You can use the scroll down menu in the Import Statistics column to display results for all possible measurement times, independently from the fact whether a measurement of that interval currently belongs to the given measurement server or not (since the query examines data collected earlier, too). As a hint the current time interval is indicated in green, with the number of measurements running with that interval.

If you select a different interval, the Statistics page is automatically displayed.

3 Click the **[view]** link in the first column; A page identical to the one displayed from Settings>Measurements>Summary is displayed, filtered by the selected measurement server.

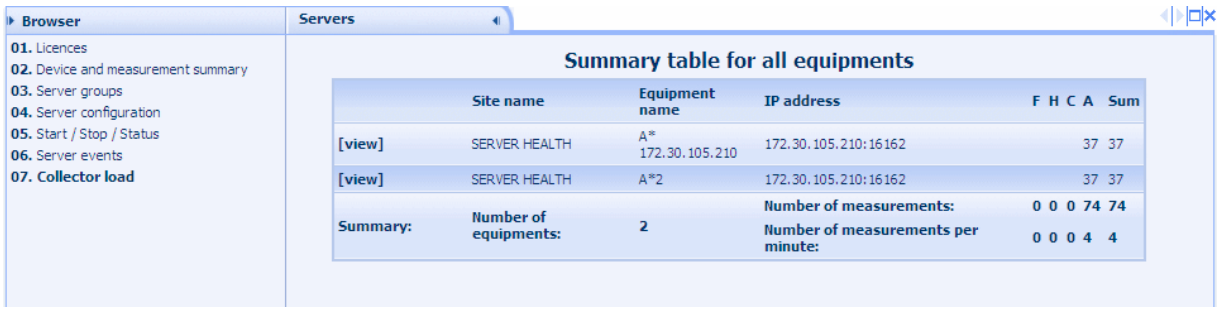

Browser
01. Licences
02. Device and measurement summary
03. Server groups
04. Server configuration
05. Start / Stop / Status
06. Server events
07. Collector load
Servers
Summary table for all equipments
Site name Equipment name IP address F H C A Sum
[view] SERVER HEALTH A* 172.30.105.210 172.30.105.210:16162 37 37
[view] SERVER HEALTH A*2 172.30.105.210:16162 37 37
Summary: Number of equipments: 2
Number of measurements: 0 0 0 74 74
Number of measurements per minute: 0 0 0 4 4

Figure 9-23: Collector Load Statistics

4 You can view the list of measurements that were unsuccessful at a given time by clicking on the **[view]** link: The list of devices and measurements are

displayed together with another link that opens to the configuration panel of the device.

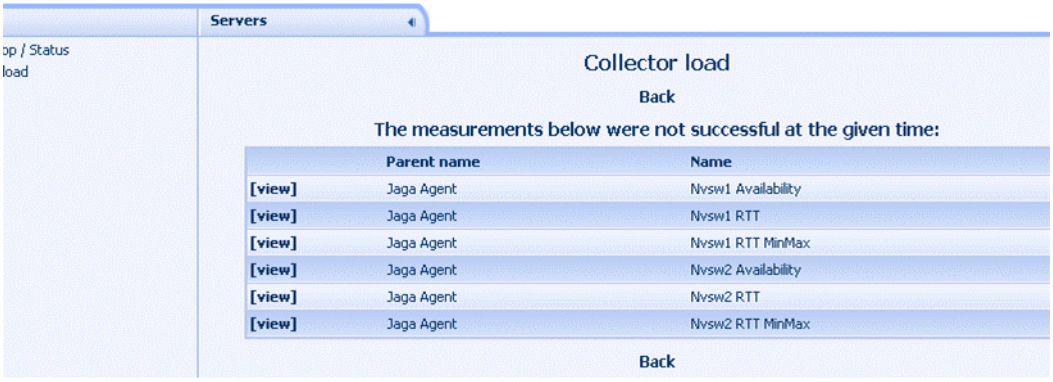


Figure 9-24: Missing Measurements at a Given Time

9.7 Audit Trail

The application records each configuration modification – equipment, site, measurement creation, modification, deletion, modification of reports and thresholds, etc. – that can be displayed under the Audit Trail menu item. The administrators are allowed to view every change, the restricted administrators are allowed to view only those changes which were made by themselves. The other users do not have access to this functionality. It also saves the name of the user who made the modification. It either equals to the user name at the WEB interface or it is a system value, if it was an automatic modification (e.g. an interface was cancelled in the equipment).

To start an audit trail query:

1 From Settings select Audit trail; The Audit Trail query page is displayed (Figure 9-25).

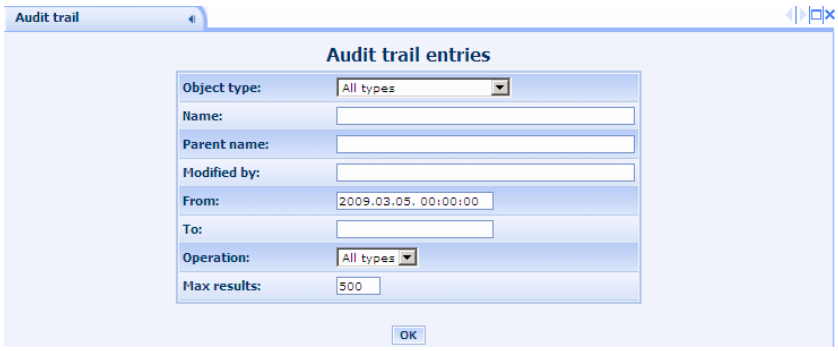


Figure 9-25: Audit Trail Query

2 Enter the filter conditions:

- **Object type:** Select a type from a scroll down menu. Possible values:
  - All: no type based filtering
  - Other: only the operations for the object types adequate for the selection appear
- **Parent name:** The name of the parent object; it can contain values only for equipments, measurement reports and chart elements
- **Name:** Object name
- **Modified by:** Name of the modifier. It is displayed only for the administrator users since the restricted administrators cannot view a change if it wasn't made by themselves.
- **From and To:** When it was modified (from-till)
- **All results:** Maximum number of displayed results. Mandatory to fill in

3 Click **OK**; The query produces a table with columns similar to the search results with the following additional items:

- Operation: Insert, Modification or Delete
- Object type
- Name
- Parent name
- Modified by
- Modification time

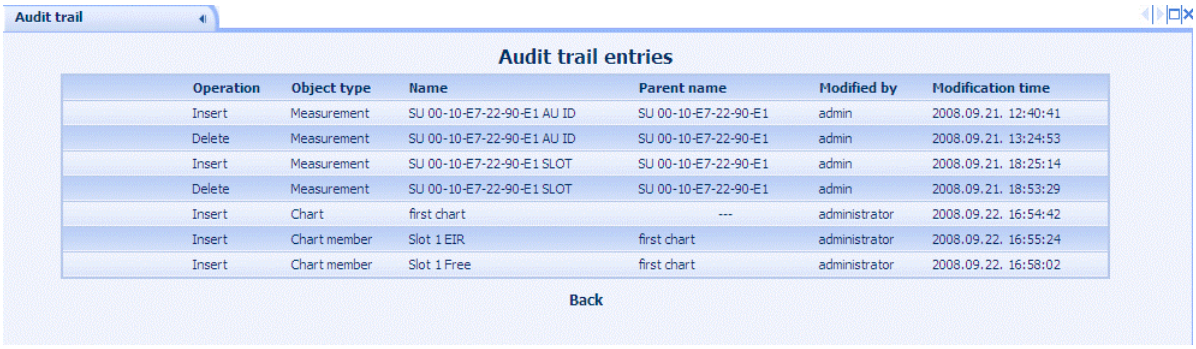

Audit trail
Audit trail entries
Operation Object type Name Parent name Modified by Modification time
Insert Measurement SU 00-10-E7-22-90-E1 AU ID SU 00-10-E7-22-90-E1 admin 2008.09.21. 12:40:41
Delete Measurement SU 00-10-E7-22-90-E1 AU ID SU 00-10-E7-22-90-E1 admin 2008.09.21. 13:24:53
Insert Measurement SU 00-10-E7-22-90-E1 SLOT SU 00-10-E7-22-90-E1 admin 2008.09.21. 18:25:14
Delete Measurement SU 00-10-E7-22-90-E1 SLOT SU 00-10-E7-22-90-E1 admin 2008.09.21. 18:53:29
Insert Chart first chart --- administrator 2008.09.22. 16:54:42
Insert Chart member Slot 1 EIR first chart administrator 2008.09.22. 16:55:24
Insert Chart member Slot 1 Free first chart administrator 2008.09.22. 16:58:02
Back

Figure 9-26: Audit Trail Entries

4 For “update” type changes, the first column also contains a **[view]** link; Click it to display the exact description that contains, the modified value in addition to the above elements.

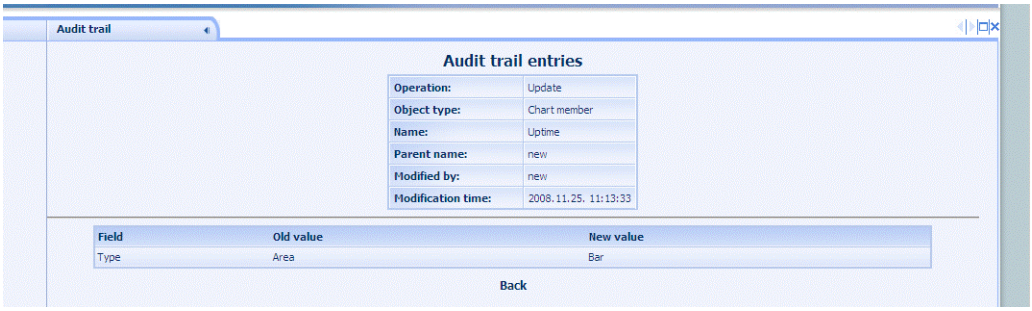


Figure 9-27: Viewing the Audit Trail

9.8 User Administration (Admin only)

The administrator user can manage the list of users and their permissions, and add new users to the system. Every administrator has the right to modify normal users, while only the admin user can modify administrators. Restricted administrators cannot modify a user except if it was created by themselves. No user can delete the admin user.

9.8.1 Registering/Modifying Users

To add or modify users:

1 From the Settings menu select User. The browser displays a list of user administration tasks. The Users tab displays a list of existing users.

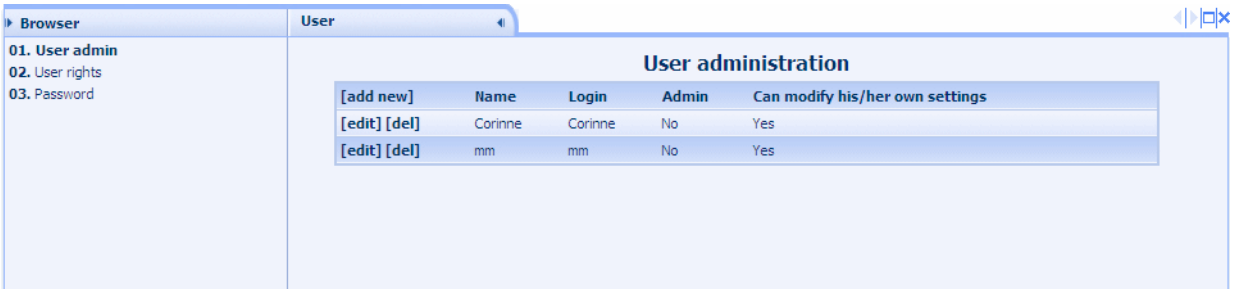


Figure 9-28: Users List

2 Select either **[add new]** or **[edit]** to modify a user (select **[delete]** to delete a user from the list); the following user definition fields are displayed .

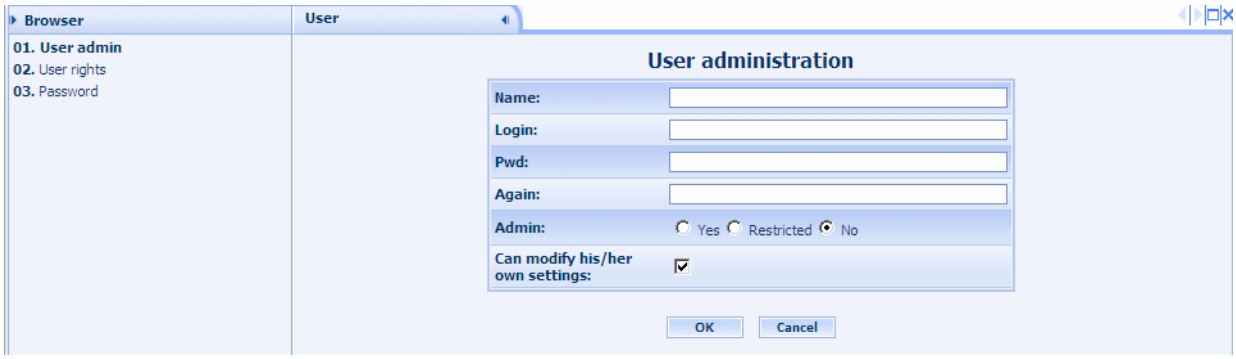


Figure 9-29: User Administration

3 Specify the following parameters for the added or modified user:

» **Name:** The name of the user, e.g. First-name Family-name

» **Login:** The user will be able to login with this name. It is suggested to use the small case letters of the English alphabet. The given value must be unique

» **Password:** An initial password. If you do not specify a new password, then only the name and the admin fields are modified.

» **Admin:** This option is only available if you are logged in with the admin user. The options are:

Table 9-2: Admin Registering Options[a]

Option	Description
Yes	Provide the registered user with administrator rights
Restricted	Provide the registered user with restricted administrator rights
No	Provide the registered user with normal or restricted rights based on the value of the next parameter

a. Refer to "User Types and Their Settings" on page 5 for more information

» **Can modify own settings:** The user can only modify their password, preferences, own virtual hierarchy and charts if this field is checked. For administrator and restricted administrator users this is always set automatically.

9.8.2 User Permissions (Rights)

9.8.2.1 Overview

For normal users, the access rights can be changed in four different levels:

- Site, equipment, measurement: These three objects are in a tree hierarchy, in which you can choose the items that the user can view. If you appoint one of these objects, then all objects below it can also be accessed by the user.

  For example, if the user has the access rights to the ROOT item (zero level site), all the objects in the system are accessible. If the user has access rights to one site, then all sites, equipment and measurements below it are accessible; however if access rights are provided only for the equipment, then

only that equipment and its measurements are accessible; access right to the measurement only makes only that measurement accessible.

Note that the rights are given only for the base hierarchy, and not for a virtual site, equipment or public chart, since the system calculates the permissions for these from the corresponding base objects.

- **Chart**: For each individual chart it can be specified whether the user can view it or not.

- **Report**: For each individual report, the user access can be set independently, which will be later combined with the access rights specified for the related site-equipment, so for example in a chart containing sites, only those rows for which the user has the rights are displayed.

- **Threshold**: Specifies if the user may view the threshold violations or not. If yes, then the system calculates also the domain of the viewable thresholds automatically based on the privileges of the base object. This entry is missing for the restricted administrators because they have always the right to see (and edit) thresholds.

9.8.2.2 Modifying User Rights

If you modify a user as a restricted administrator then you can grant rights only for those objects for which you have right as well. Later on an administrator can grant more right to the user. However, if the right setting for a restricted administrator is edited (even if there was no change), then the system automatically checks all users created by that restricted administrator and revokes the rights for all objects for which that restricted administrator does not have right.

The user can view certain measurements without any special settings, those that belong to some of the agents. This is true only if the user can view the equipment, and the measurement of the agent is the same as the name of the equipment, or starts with that name and is followed by a space.

The set of visible public virtual sites, pieces of equipment and charts are determined automatically based on the measurement objects accessible by the user. For example:

- The users can only view a public virtual site if they have the right to view its real or virtual parent site

- The user scan view a virtual piece of equipment if they have the right to see all charts of that equipment.
- The user can view a public chart if they can view all measurements displayed on the chart.

To modify user rights:

1 From Settings > User select User Rights; The User Rights window is displayed.

Figure 9-30: User Selection

2 Select the user type and select whether the equipments and the measurements should also be included in the list of displayed objects.

3 Click **OK**; The User Rights modification window is displayed. The elements that cannot be accessed by the user are displayed on the left-hand side, while those that can be viewed on the right-hand side.

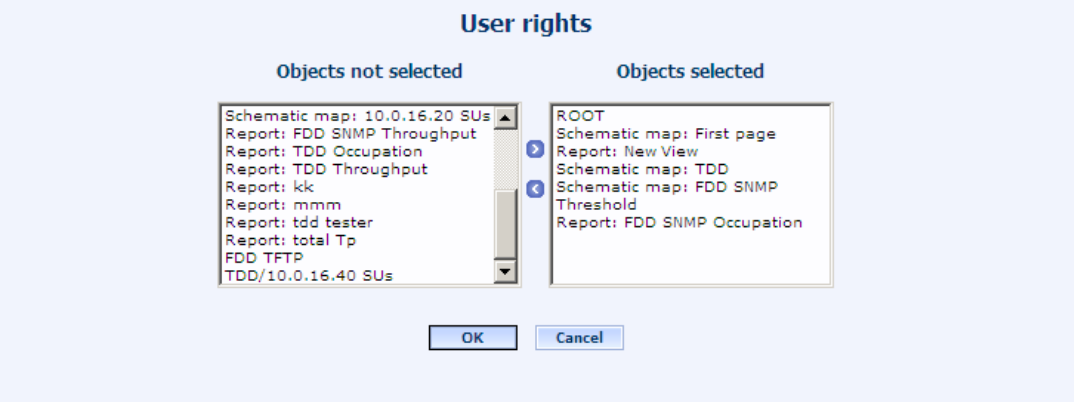


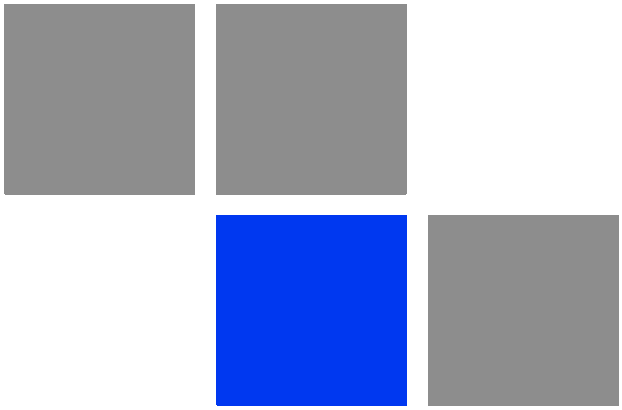
Figure 9-31: User Rights Modification

4 Select one or more items from either of these lists and move them to the other side by clicking on the appropriate arrow. The program automatically filters out the elements whose parent – already available in the hierarchy above – is present.

For example if you mark all basic equipment and sites and move them to the right hand side of the window, after saving the modification only the ROOT object (the topmost) will remain in the right list.

9.8.3 High Availability Performance

StarQuality is able to provide high availability as a result of using measurement server groups. Different strategies must be applied depending on the number of machines serving StarQuality and its Oracle database. However, for all strategies except the non-measuring server components, it is recommended to install all components on the same machine with Oracle. The report and threshold modules can be relocated to another machine if there is enough capacity.



Glossary

The following terms are frequently used in this manual:

- **Element** - measurement types.
- **Equipment** - two types of equipment are used in the STARQuality system: AU (Access Unit) and SU (Subscriber Unit)
- **Public/Private** objects - Public objects (sites, etc.) are created by the admin user for the whole system. Private object are created by the local user for the local system only.
- **ROOT Site** - the basic system network site, under which you can create sites and virtual sites
- **Slot** - A specific AU within the base station
- **(non-virtual) Site** - A base station, containing up to 7 AUs, on which measurements are collected
- **Virtual Site** - any collection of equipments, grouped by various subjects, such as areas